Digitized by the Internet Archive
in 2024

https://archive.org/details/progress-of-theoretical-physics_1946-1958_1-20_cumulative-index

QC
1
P885
INDEX
V. 1-20
1946/58

Science
PER

DUPLICATE

MASS. INST. OF TECHNOLOGY
NOV 18 1959
LIBRARY

1 r 9

PROGRESS OF THEORETICAL PHYSICS

GENERAL INDEX

to

Vols. 1–20 + Supplements #1–8.

Extra Number

✓

September 1959

Published for the

Research Institute for Fundamental Physics

The Physical Society of Japan

PROGRESS OF THEORETICAL PHYSICS

Founded by H. Yukawa in 1946

This journal, founded in 1946, was started on a small scale as a quarterly publication. It is now compiled and published as a monthly organ for the Research Institute for Fundamental Physics and, to cope with the yearly rapid stride made in physics, now contains 150 to 200 pages.

This journal contains many subjects covering the extensive fields in theoretical physics. The main contents of this publication are: field theory, properties of elementary particles, high energy physics, solid state physics, statistical mechanics, etc.

Each edition has a section reserved for letters to the editor, enabling us to give prompt reports concerning the results of both theoretical physics and experiments closely connected with this subject.

In the beginning, the contributors to this journal were chiefly Japanese physicists. At present, however, contributions from abroad have been increasing, which establishes our publication as one of the major international scientific journals in theoretical physics.

Subscription price (postfree) *$15.00 per year*

SUPPLEMENT

of the

Progress of Theoretical Physics

This journal was founded in 1955 as a supplement to the "Progress of Theoretical Physics" in order to introduce abroad the results of theoretical physics in Japan.

Though it was planned at the beginning to be a quarterly publication, it proved to be a physical impossibility. Since last year, we have been favored by the cooperation of associate editors of "Progress of Theoretical Physics", which will now enable us to publish periodically.

From now on, this journal will be mainly concerned in taking up important problems in various fields of theoretical physics and compiling reports sent in by competent researchers in specific fields.

Subscription price (postfree) *$ 4.00 per year*

Board of Editors:

K. HUSIMI M. KOTANI T. MUTO
S. SAKATA S. TOMONAGA H. YUKAWA
M. KOBAYASI, *Managing Editor*

CONTENTS

Progress of Theoretical Physics

Vol. 1 (1946) 1
Vol. 2 (1947) 2
Vol. 3 (1948) 4
Vol. 4 (1949) 9
Vol. 5 (1950) 14
Vol. 6 (1951) 21
Vol. 7 (1952) 28
Vol. 8 (1952) 32
Vol. 9 (1953) 37
Vol. 10 (1953) 41
Vol. 11 (1954) 46
Vol. 12 (1954) 50
Vol. 13 (1955) 55
Vol. 14 (1955) 60
Vol. 15 (1956) 64
Vol. 16 (1956) 68
Vol. 17 (1957) 72
Vol. 18 (1957) 78
Vol. 19 (1958) 82
Vol. 20 (1958) 87

Supplement of "Prog. Theor. Phys."

No. 1 (1955) 93
No. 2 (1955) 95
No. 3 (1956) 96
No. 4 (1957) 96
No. 5 (1958) 96
No. 6 (1958) 97
No. 7 (1958) 97
No. 8 (1958) 97

1127-1

CONTENTS

Vol. 1, No. 1 July 1946

Magnetic Moment and Virtual Dissociation of Nuclear Particle .... Gentaro Araki 1
On the Generalized Transformation Functions .... Yasutaka Tanikawa 12
On the Electromagnetic Properties of Nucleons. I .... Minoru Kobayasi & Eizô Kanai 21

Vol. 1, No. 2 August～September 1946

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields .... Sin-itiro Tomonaga 27
Some Remarks on Bopp's Field Theory ...... Eizô Kanai & Shuji Takagi 43
On the Interaction between Vector Mesons and Nucleons ...... Shoji Ozaki 56

Vol. 1, No. 3 October 1946

On the Meson Pair Theory of Nuclear Forces. I .... Susumu Noma 71
On the Effect of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. I .... Sin-itiro Tomonaga 83
A Note on the Method of Radiation Damping and Its Application to the Photo-Mesonic Process .... Minoru Kobayasi & Kuninosuke Imaeda 102

Vol. 1, No. 4 November～December 1946

On the Effect of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. II .... Sin-itiro Tomonaga 109
Quantum Mechanics of Circularly Polarized Photons. I ——*General Theory*—— .... Gentaro Araki 125
On the Correlations between Mesons and Yukawa Particles .... Shoichi Sakata & Takesi Inoue 143

Errata:

On the Generalized Transformation Functions (Vol. 1, p. 12) .... Y. Tanikawa 150

Author Index to Volume 1 i

Vol. 2, No. 1 January～February 1947

Quantum Mechanics of Circularly Polarized Photons. II —*Application to the Normal Zeeman Effect*— ....Gentaro Araki 1
On the Effect of the Field Reactions on the Interacion of Mesotrons and Particles. III..................................Sin-itiro Tomonaga 6
On the Theory of Ferromagnetism at 0°K ....Shôhei Miyahara 25

Letters to the Editor:

The Self-Energy of the Electron and the Mass Difference of Nucleons...S. Sakata & O. Hara 30
On the Lifetime of the Neutral Meson..................................Y. Tanikawa 31
On the Decay of the Charged Meson ....Y. Tanikawa 31

Vol. 2, No. 2 March～June 1947

Elastic Collision Cross Section of Oxygen Atom for Slow Electron..Takahiko Yamanouchi 33
On the Interaction of Mesons with the Gravitational Field. I...Ryoyu Utiyama 38
On the Effect of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. IV..........................Sin-itiro Tomonaga 63
On Dirac's General Transformation Function. I...........Satosi Watanabe 71

Letters to the Editor:

On the Modification of the Hamiltonian of a Nuclear Particle due to Its Virtual Dissociation ....G. Araki 89
Some Considerations about the Production of Meson Showers in Matter....S. Tomonaga 90

Abstracts of the Symposium on the Theory of Elementary Particles (1946)

On the Angular Momentum of the Flügge's Nuclear Liquid Drop Model....M. Nogami 92
On the Production of Cosmic Ray Bursts by Mesotrons.............I. Sato & S. Ozaki 92
On the Meson Pair Theory of Nuclear Forces. II............................S. Noma 92
Interaction of Elementary Particles —*Mixed Theory of Nuclear Fields*— ....Y. Tanikawa, M. Hirano & M. Tatsuoka 93
On the Exclusion Principle of the Assembly of the Systems of Bose-Particles with Negative Energy ....Y. Tanikawa 93
On the Self-Energy of the Bose Particles ....Y. Tanikawa 94
On the Interaction of Elementary Particles. II..........................T. Miyazima 94

On the Elimination of the Auxiliary Condition in the Quantum Electrodynamics .... S. Hayakawa, Y. Miyamoto & S. Tomonaga 95
Note on the Scattering of a Meson on colliding with a Nucleon...........S. Tomonaga 96
On the Meaning of the Interaction. II ....H. Suzuki 96
Quantum Mechanics of Circularly Polarized Photons ....G. Araki 96
On the Analogy between Born's Electrostatic Field and Compressible Flow......I. Imai 97
On the Energy-Momentum Tensor ....G. Araki 97
On the Hamiltonian Form of the General Field Equations....................K. Husimi 97
On the λ-Limiting Process..R. Utiyama 98
On the Non-Infinitesimal Commutation Relations ....E. Kanai 98
A Note on the Dirac Space..S. Watanabe 98
An Attempt at the Theory of Elementary Particles ....H. Yukawa 98
Correlation between Mutual Interactions of Elementary Particles..............S. Sakata 99
Some Consideration about the Production of Meson Showers in Matter....S. Tomonaga 99
Super-Many-Time Formulation of the Quantum Theory of Wave Fields....S. Tomonaga 100

Vol. 2, No. 3 July~October 1947

On a Relativisitically Invariant Formulation of the Quantum Theory of Wave Fields. II ——*Case of Interacting Electromagnetic and Electron Fields*—— ....Ziro Koba, Takao Tati & Sin-itiro Tomonaga 101
On the Canonical Transformation in Quantum Theory......Ryoyu Utiyama 117
Giant Stars producing Energy by C-N Reactions ....Chushiro Hayashi 127
Some Remarks on the Non-Infinitesimal Commutation Relations..Eizô Kanai 135
The Theory of the Interaction of Elementary Particles. I ——*The Method of the Theory of Elementary Particles*—— ....Shoichi Sakata 145
On the Electromagnetic Properties of Nucleons. II ....Eizô Kanai, Minoru Kobayasi & Shigeo Kokaji 151

Letters to the Editor:

On the β-Ray Spectrum of Cu^{64} ....S. Nakamura & K. Ono 158
Modified Meson Pair Theory..S. Noma 159
Remarks on the Ferromagnetism of the Semi-Conductors....T. Yamamoto & S. Takagi 160
On the Theory of Air Shower initiated by Secondary Soft Rays ....S. Hayakawa & S. Tomonaga 161

Vol. 2, No. 4 November～December 1947

On the Mesic Self-Field around a Nucleon ....Kugao Nakabayasi 163
On the Electromagnetic Properties of Nucleons. III......................................Eizô Kanai & Minoru Kobayasi 179
Conflict between Matter and Field ——*An Analysis of the Difficulties of the Theory of Elementary Particles*—— ....Mituo Taketani 187
On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. III ——*Case of Interacting Electromagnetic and Electron Fields*—— ....Ziro Koba, Takao Tati & Sin-itiro Tomonaga 198
On the Theory of Elementary Particles. I ....Hideki Yukawa 209

Letters to the Editor:

Correction due to the Reaction of "Cohesive Force Field" for the Elastic Scattering of an Electron..D. Ito, Z. Koba & S. Tomonaga 216
Errata to the above Letter ....D. Ito, Z. Koba & S. Tomonaga 217
Application of the "Self-Consistent" Subtraction Method to the Elastic Scattering of an Electron ....Z. Koba & S. Tomonaga 218
The Supplementary Note to the Generalized Transformation Function.... Y. Tanikawa 219
On the Cosmic-Ray Meson and the Nuclear Meson.......................Y. Tanikawa 220
Author Index to Volume 2 .... i—ii

Vol. 3, No. 1 January～March 1948

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. IV ——*Case of Interacting Electromagnetic & Meson Fields*—— ....Suteo Kanesawa & Sin-itiro Tomonaga 1
On the Interaction of Mesons with the Gravitational Field. II...Ryoyu Utiyama 14
On Wentzel's Method in the Meson Theory ....Tatuoki Miyazima, Takao Tati & Sin-itiro Tomonaga 26
On the Quantum Theory of Radiation Damping and the Lifetime of the Meson ....Yasutaka Tanikawa 38
On the Meson Pair Theory of Nuclear Forces. II ....Susumu Noma 54
Pri la Teorio Alojteorimaniera de Feromagnetismo ....Kei Yosida & Syôhei Miyahara 74

Note on the Collision Energy Loss of Fast Charged Particle.............. .... Kugao Nakabayasi 82

Letters to the Editor:

On the Infrared Catastrophe in the Problem of Electron Scattering ....T. Sebe 95
Note on Tanikawa's Theory of Damping ....H. Enatsu 96
Singularity at the Origin of the Schrödinger Eigenfunction in the Coulomb Field...... ....G. Araki 97
Radiative Corrections for Compton Scattering ....Z. Koba & G. Takeda 98
On the Temperature Effect of Underground Cosmic Radiation ....T. Miyazima 99

Vol. 3, No. 2 April~June 1948

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. V ——*Case of Interacting Electromagnetic and Meson Fields*—— .... Suteo Kanesawa & Sin-itiro Tomonaga 101
On the Classical Theory of the Electron. I ....Ryoyu Utiyama 114
On the Interaction of the Meson and Nucleon Field in the Supper-Many-Time Theory ....Yonezi Miyamoto 124
Auxiliary Condition and Gauge Transformation in the "Super-Many-Time Theory". I................Ziro Koba, Yasuharu Ôisi & Muneo Sasaki 141
Interval Formula for Multiplets of Atomic Energy Levels. I .... Gentaro Araki 152
A Note on the Dirac Space...........................Satosi Watanabe 160
Unified Theory of Recurrence Formulas. I ....Teturo Inui 168
The Theory of the Interaction of Elementary Particles. II——*The Electromagnetic Self-Energy of the Elementary Particles*——..Osamu Hara 188

Letters to the Editor:

Cosmic-Ray Underground ....S. Hayakawa 199
Note on the Two Meson Hypothesis..S. Hayakawa 200
On the Transformation of Spin Functions ....H. Narumi 202
Radiative Corrections in e^2 for an Arbitrary Process involving Electrons, Positrons, and Light Quanta ....Z. Koba & G. Takeda 203
Reciprocity in Generalized Field Theory...................................H. Yukawa 205

Abstracts of Symposium on the Theory of Elementary Particles (1947) .. 207

The Unified Field Theory combined with the Quantum Theory.............G. Iwata 207
Combination of the Unified Field with the Corpuscular Field............... G. Iwata 207
On the Level Shift of Hydrogen Arom.........................K. Ono & Y. Nambu 207
Infrared Catastrophe and Field Reaction in General Processes of Quantum Electrodynamics.. Z. Koba 208
On the Classical Model of the Bremsstrahlung of the Vector Meson.. S. Hayakawa & Y. Miyamoto 209
On the Classical Model of the Meson Production in the Collision between Nucleons .... S. Hayakawa & Y. Miyamoto 209
Remarks on the Experiments of the Scattering of Meson...............S. Hayakawa 210
On a Relativistically Invariant Quantization of the First Order Wave Equations.. S. Kanesawa 210
On the Level-Shift due to Radiation Reaction...............T. Tati & S. Tomonaga 211
Corrections due to Reactions of "Cohesive Force Field" to Elastic Scattering of an Electron....................................Z. Koba, D. Ito & S. Tomonaga 211
Effect of the Radiation Field on the Meson Decay..................... T. Miyazima 212
On the Interaction between a Negative Meson and a Proton..O. Hara & H. Umezawa 212
On the Correlation between Yukawa Particle and Meson. II............... S. Sakata 212
On the Theory of the Radiation Damping ....Y. Tanikawa 213
On the Beta-Disintegration Possibility accompanying with the Capture of a Negative Meson by a Nucleus... Y. Tanikawa 213
On the Electromagnetic Self-Energy of a Moving Electron .... Y. Tanikawa & O. Hara 213
On the Negative Energy Photon ....K. Sawada 214
On the Theory of Elliptically Polarized Photons.............................G. Araki 214
On the Similarity between Chemical and Nuclear Reactions. I..............E. Kanai 214
On the Higher Approximation of Born's Method in the Thory of Atomic Collision..M. Nogami & N. Shôno 215
On the Internal Conversion of γ-Rays in M-Shells..........M. Tanifuji & M. Nogami 215
On the Meson Pair Theory of Nuclear Physics. III.............H. Enatsu & S. Noma 215
On the Meson Pair Theory of Nuclear Forces. IV.............S. Noma & S. Hiroishi 216
Absorption and Decay of Mesons in the Pair Theory.......................S. Noma 216
On the Nature of the Mesotron...H. Yukawa 217
On the Coupling Constant of Charged Meson in the Non-Symmetrical Theory .... Y. Oda 217

Vol. 3, No. 3　July～September 1948

On the Classical Theory of the Electron. II ....Ryoyu Utiyama 219

Auxiliary Condition and Gauge Transformation in the "Super-Many-Time Theory". II ....Ziro Koba, Yasuharu Ôisi & Muneo Sasaki 229

Unified Theory of Recurrence Formulas. II ....Teturo Inui 244

Interval Formula for Multiplets of Atomic Energy Levels. II .... Gentaro Araki 262

Corrections due to the Reaction of "Cohesive Force Field" to the Elastic Scattering of an Electron. I.. ....Daisuke Ito, Ziro Koba & Sin-itiro Tomonaga 276

On Radiation Reactions in Collision Processes. I ——*Application of the "Self-Consistent" Subtraction Method to the Elastic Scattering of an Electron*——.......................Ziro Koba & Sin-itiro Tomonaga 290

On the Infrared Catastrophe in the Problem of Electron Scattering........ .... Takasi Sebe 304

Letters to the Editor:

On the Value of the Electric Quadrupole Moment of the Deuteron...........E. Isiguro 312

Examples in Which the Perturbation Method fails.......................... T. Kato 313

On the Relations between the Cosmic-Ray Mesons and Nuclear Mesons. I..Y. Tanikawa 314

On the Relation between the Cosmic-Ray Mesons and Nuclear Mesons. II .... Y. Tanikawa 315

The Electromagnetic Shift of Energy Levels ....O. Hara & T. Tokano 316

The Problem of Vacuum Polarization (*to be continued to*, Vol. 3, p. 456 L) .... H. Umezawa, J. Yukawa & E. Yamada 317

On the Correlation between Yukawa Particle and Meson..........T. Inoue & S. Ogawa 319

Reactive Corrections for the Elastic Scattering of an Electron....................... ....S. Endo, T. Kinoshita & Z. Koba 320

On the Multiple Production of Meson ....S. Hayakawa 321

Errata:

The Theory of the Interaction of Elementary Particles. II (Vol. 3, p. 188)...O. Hara 323

Prog. Theor. Phys. Vol. 3 (1948), Abstracts, Line 16th, *for* T. Miyamoto *read* T. Miyazima 323

Vol. 3, No. 4   October～December 1948

Corrections due to the Reaction of "Cohesive Force Field" to the Elastic Scattering of an Electron. II .... Daisuke Ito, Ziro Koba & Sin-itiro Tomonaga 325

On the Theory of β-Disintegration .... Yasutaka Tanikawa 338

On the Neutral Meson .... Mituo Taketani 349

On Born's Successive Approximation in the Theory of Atomic Collision .... Mokichiro Nogami 356

On the Angular Momentum of the Atomic Nucleus induced by Its Surface Vibrations .... Mokichiro Nogami 362

The Theory of the Interaction of Elementary Particles. III——*On the Nature of the C-Meson*—— .... Osamu Hara & Makoto Tatsuoka 369

On Dirac's General Transformation Function. II-a .... Satosi Watanabe 378

A Self-Consistent Subtraction Method in the Quantum Field Theory. I .... Takao Tati & Sin-itiro Tomonaga 391

On Radiation Reactions in Collision Processes. II——*Radiative Corrections for Compton Scattering*—— .... Ziro Koba & Gyo Takeda 407

Divergence Difficulty and Mixed Meson Theory. I .... Gentaro Araki 422

Letters to the Editor:

On the Admissible Wave Functions .... K. Kodaira & T. Kato 439

On the Quantization of the Dissipative System .... E. Kanai 440

On the Theory of Nuclear Force .... M. Sugawara 442

Reaction of Radiation Field on Meson .... K. Baba & S. Kanesawa 443

On the Relativistic Formulation of the Perturbation Theory .... Y. Nambu 444

Some Remarks on the Theory of β-Disintegration .... S. Takagi 445

On the Hermitian Condition .... G. Araki 446

On the Expectation Value .... G. Araki 448

On the β-Spectra of the Cu^{64} .... S. Goto, E. Kanai & M. Kobayasi 449

On a Pair of Reciprocal de Sitter Spaces .... S. Watanabe 450

Possible Types of Nonlocalizable Fields .... H. Yukawa 452

On the Existence of Light Nuclear Mesons .... M. Sasaki, S. Nakamura & S. Hayakawa 454

The Self-Consistent Subtraction Method and Heitler's Integral Equation .... T. Miyazima 455

The Problem of Vacuum Polarization (*Continued from* Vol. 3, p. 317 L) .... H. Umezawa & E. Yamada 456

Some Remarks on Cosmic-Ray Burst .... S. Hayakawa 458

Supermultatempa Teorio por Mezonaj Kampoj .... E. J. Belinfante 460

On the Proton-Decay in Cosmic-Ray Stars .... Y. Fujimoto & Y. Yamaguchi 462

Vol. 4, No. 1 Junuary~March 1949

On Dirac's General Transformation Function. II-b. ....Satosi Watanabe 1
On the Thermal Reactions in Gas Phase. I...................Eizô Kanai 11
Theory of the Interaction of Elementary Particles. IV_1 ——*The Problem of Vacuum Polarization* (1)——.................................
......................Hiroomi Umezawa, Jiro Yukawa & Eiji Yamada 25
Divergence Difficulty and Mixed Meson Theory. II..........Gentaro Araki 34
Analytical Expression of Self-Consistent Functions and Doublet Intervals for F I, Ne II, Mg IV and Al V ....Wataro Watari 42
A Self-Consistent Subtraction Method in the Quantum Field Theory. II_1
.... Hiroshi Fukuda, Yonezi Miyamoto & Sin-itiro Tomonaga 47
On Radiations Reactions Collision Processes. III_1——*First Radiative Correction for an Arbitrary Process including Electrons, Positrons, and Light Quanta*—— ....Ziro Koba & Gyo Takeda 60
Notes on the Self-Energy Problems ....
..................Katuro Sawada, Shuji Takagi & Minoru Kobayasi 71
The Level Shift and the Anomalous Magnetic Moment of the Electron
....Yoichiro Nambu 82

Letters to the Editor:

Reaction of Meson Field on Nucleon...............................K. Baba & D. Ito 95
Second Configuration Space and Third Quantization ....Y. Nambu 96
Semi-Classical Derivation of the Anomalous Magnetic Moment of the Electron..Z. Koba 98
Effect of the *C*-Meson Field on the Anomalous Magnetic Moment of the Electron....
.... Z. Koba, Y. Nambu & S. Tani 99
Reactive Corrections for the Elastic Scattering of an Electron (*Errata for* Vol. 3, p. 320)
...................................S. Endo, T. Kinoshita & Z. Koba 100
Interpretation of Bursts in Thin-Walled Chambers ....
....Y. Fujimoto & Y. Yamaguchi 101

Errata:

On the β-Spectra of the Cu^{64} (Vol. 3, p. 449)........S. Goto, E. Kanai & M. Kobayashi 102
Possible Types of Nonlocalizable Fields (Vol. 3, p. 452)...................H. Yukawa 102

Contents and Author Index to Volume 3 .... i~vi

Vol. 4, No. 2　April~June 1949

On the Energy Level Shifts of Atoms due to the Interaction between the Electron and the Electromagnetic Field .... Osamu Hara & Takasi Tokano 103
Theory of the Interaction of Elementary Particles. IV$_2$ — *The Problem of Vacuum Polarization* (2)—— .... Hiroomi Umezawa, Jiro Yukawa & Eiji Yamada 113
A Self-Consistent Subtraction Method in the Quantum Field Theory. II$_2$ .. .. Hiroshi Fukuda, Yoneji Miyamoto & Sin-itiro Tomonaga 121
On Radiation Reactions in Collision Processes. III$_2$— *First Radiative Correction for an Arbitrary Process including Electrons, Positrons, and Light Quanta*—— .... Ziro Koba & Gyo Takeda 130
Pri la Teorio de Kolektivaj Elektronoj de Feromagnetismo .... Syôhei Miyahara 142
On the Relation between Heisenberg's Theory of Ferromagnetism and That of Slater .... Kei Yosida 151
A Note on the Theory of Ferromagnetism .... Haruo Shimazu 160
Pri la Kalkulado de Elektromagnetaj Fenomenoj per Kampo de Neŭtraj Vektor-Mezonoj kun Neglektebla Maso .... F. J. Belinfante 165
On the Thermal Reactions in Gas Phase. II .... Eizô Kanai 171
Theory of the *F*-Centers of Coloured Alkali Halide Crystals. I ——*Structure of F-Absorption Bands*—— .... Toshinosuke Muto 181
On the Meson Theory of Nuclear Forces .... Gentaro Araki 193
The Propagation of Order in Crystal Lattices .... Haruo Shimazu 201
Note on the Formal Solution of the Tomonaga-Schwinger Equation .... Smio Tani 209
Reactive Corrections for the Elastic Scattering of an Electron .... Shinji Endo, Tôichirô Kinoshita & Ziro Koba 218

Letters to the Editor:

On the Nucleon Component in Cosmic Rays .... Y. Fujimoto & Y. Yamaguchi 230
Note on the Deuteron Problem of the Mixed Meson Theory of Pseudovector and Pseudoscalar Fields .... S. Hiroishi & H. Tanaka 231
Phenomenological Treatment on the Production of Cosmic-Ray Mesons .... S. Hayakawa & J. Nishimura 232

Cosmic-Ray Bursts under Thick Shields....Y. Fujimoto, S. Hayakawa & Y. Yamaguchi 233

On the γ-Decay of Neutral Meson ....H. Fukuda & Y. Miyamoto 235

Note on the Interaction Representation in case of Meson Field interacting with Electromagnetic Field ....S. Kanesawa 236

On the Meson Pair Theory of Nuclear Forces in the Interaction Representation...... ....S. Kanesawa 238

On the Multiple Production of Mesons ....K. Sawada & S. Takagi 239

Note on the Relativistic Formulation of Belinfante's Transformation.................. .... Y. Katayama & S. Takagi 240

Errata:

Effect of the *C*-Meson Field on the Anomalous Magnetic Moment of the Electron (Vol. 4, p. 99)..Z. Koba, Y. Nambu & S. Tani

Theory of the Interaction of Elementary Particles. IV$_1$ (Vol. 4, p. 25)................ .... H. Umezawa, J. Yukawa & E. Yamada 242

Vol. 4, No. 3 July~September 1949

Theory of the *F*-Centers of Coloured Alkali Halide Cristals. II——*Electronic Structure of F-Centers General Theory*——.......Toshinosuke Muto 243

Theory of the Interaction of Elementary Particles. V ——*The Problem of Vacuum Polarization* (3)—— ..Hiroomi Umezawa & Eiji Yamada 251

The Phase Transition and the Piezoelectric Effect of KH_2PO_4........... ....Shigeo Yomosa & Takeo Nagamiya 263

Note on the Finite Extension of Electron ....Katuro Sawada 275

Cosmic-Ray Underground. I ....Satio Hayakawa & Sin-itiro Tomonaga 287

A Remark on Relativistically Invariant Formulation of the Quantum Field Theory ....Suteo Kanesawa & Ziro Koba 297

Intervals of Cl I, A II, K III, Ca IV ^{2}P ....Wataro Watari 312

Triplet Intervals of Beryllium and Calcium ....Wataro Watari 314

Intervals of Si IV ^{2}P Levels.........................Simpei Tutihasi 317

Semi-Classical Treatment of the Reactive Corrections. I ——*The Anomalous Magnetic Moment of the Electron*——....... .... Ziro Koba 319

On the Method of the Third Quantization. I.............Yoichiro Nambu 331

On the γ-Decay of Neutral Meson ....Hiroshi Fukuda & Yoneji Miyamoto 347
On the Dirac's Indefinite Metric Space........Naomi Shôno & Nobuo Oda 358

Letters to the Editor:

The Half-Life of Radioactive Decay of Free Neutron..........N. Shôno & H. Hagiwara 364
On the Eigenvalue Problem of Hydrogen..................................G. Araki 366
An Improvement on the Integrations appearing in Perturbation Theory ....H. Umezawa & R. Kawabe 367
General Formulae appearing in the Problem of the Vacuum Polarization..................H. Umezawa & R. Kawabe 368
Vacuum Polarization due to Various Charged Particles......H. Umezawa & R. Kawabe 369
The Self-Energy of a Dirac Particle and Its Relativistic Covariance ....R. Kawabe & H. Umezawa 370
A Preliminary Treatment of Nucleon Cascade..................H. Kita & H. Hasegawa 371
An Attempt to Pauli's Regulator....................................Y. Katayama 372
A Divergence Free Field Theory ....K. Sawada 374
On the Photo-Disintegration of the Deuteron ——*Pseudoscalar Meson Theory*—— ....H. Enatsu & Y. Takano 375
Three Dimensional Calculations of the Cosmic Ray Intensities. I ....H. Hasegawa & H. Kita 376
On the *C*-Meson Theory..................................Y. Katayama & K. Sawada 377
Domain of Kinetic Energy and Perturbation Theory ....G. Araki 379
On the Gauge-Difficulty in the γ-Decay of the Neutral Scalar Meson ....D. Ito & T. Miyazima 380
On the Electronic Component in Extensive Air Showers..................Y. Fujimoto, S. Hayakawa & Y. Yamaguchi 381
External Vacuum Polarization..Z. Koba 382
Magnetic Moment of Nucleon ....K. Sawada 383
On the Electromagnetic Self-Energy of Meson ....S. Hanawa & S. Kanesawa 385
Application of Pauli's Regulator to the γ-Decay of Neutrettos..................H. Fukuda, Y. Miyamoto, T. Miyazima & S. Tomonaga 385
On the Life of the Neutral Meson.......................................S. Hayakawa 386
On the Nature of τ-Meson...................H. Fukuda, S. Hayakawa & Y. Miyamoto 388
Selection Rule for Meson Problem ....H. Fukuda & Y. Miyamoto 389
On the Electron-Positron Pair Disintegration of the Neutral Meson..................H. Fukuda & Y. Miyamoto 391
The Three Quanta Disintegration of the Neutral Meson ....H. Fukuda & Y. Miyamoto 392
Note on the Wave-Equation in the Non-Localizable System.................H. Suzuki 394
High Energy Photo-Disintegration of the α-Particle............Y. Nishida & M. Nogami 394
On the Self-Energy of the Neutretto...................................Y. Katayama 396

Errata:

Phenomenological Treatment on the Production of Cosmic-Ray Mesons (Vol. 4, p. 232)... .... S. Hayakawa & J. Nishimura 397

Vol 4, No. 4 October～December 1949

On the Method of the Third Quantization. II............Yoichiro Nambu 399
A Divergence Free Field Theory ....Katuro Sawada 412
An Improvement on the Integrations appearing in Perturbation Theory.... .... Hiroomi Umezawa & Rokuo Kawabe 420
Some General Formulae relating to Vacuum Polarization .... Hiroomi Umezawa & Rokuo Kawabe 423
Vacuum Polarization due to Various Charged Particles .... Hiroomi Umezawa & Rokuo Kawabe 443
The Self-Energy of a Dirac Particle and Its Relativistic Covariance...... ....Rokuo Kawabe & Hiroomi Umezawa 461
On the Nuclear Stars ....Yoichi Fujimoto & Yoshio Yamaguchi 468
Applicability of Pauli's Regulator to the γ-Decay of Neutrettos.......... H. Fukuda, Y. Miyamoto, T. Miyazima, S. Tomonaga, S. Oneda, S. Ozaki & S. Sasaki.. 477
On the Reaction of Radiation Field..........Muneo Sasaki & Ryoji Suzuki 485
On the Gauge-Difficulty in the γ-Decay of the Neutral Scalar Meson...... ....Daisuke Ito & Tatuoki Miyazima 492
Cosmic-Ray Underground. II........Satio Hayakawa & Sin-itiro Tomonaga 496
On the Nature of Cosmic Ray Bursts ..Yoichi Fujimoto & Satio Hayakawa 502
On the Convergence of the Perturbation Method. I............Tosio Kato 514
On the Decay of Heavy Mesons. I ——*On Pauli's Regulator in the Calculation of Meson Decay Problems*—— ....Shoji Ozaki, Sadao Oneda & Seibun Sasaki 524
On the Magnetic Moment of Nucleon ....Katuro Sawada 532
On the Photodisintegration of the Deuteron (*Pseudoscalar Meson Theory*) ....Hiroshi Enatsu & Yoshiro Takano 543
On the mu-Meson Capture.. .... Mituo Taketani, Muneo Sasaki & Seitaro Nakamura 552
On the Production of π-Mesons in Nucleon-Nucleon Collisions ....Shuji Takagi 557

Letters to the Editor:

Remarks on the Ambiguity in Quantum Field Theory ....Y. Katayama & S. Hori 565
Reaction of Meson Field on Nucleon ....H. Kita 566
Note on the Self-Energy and Self-Stress ....K. Sawada 568
On the Nuclear Stars (*Addendum for* Vol. 4, p. 468) ....Y. Yamaguchi 569
Another τ-Meson.................................S. Hayakawa & Y. Yamaguchi 570
Directional Distribution of Extensive Air Showers.................................
.... Y. Fujimoto, S. Hayakawa & Y. Yamaguchi 571
On the Nuclear Forces ....H. Enatsu 572
Note on the Vacuum Polarization ....G. Takeda 573
Remarks on the Nuclear Disintegration by Meson Capture..........................
.....................................Y. Fujimoto, S. Hayakawa & Y. Yamaguchi 575
Nuclear Disintegration by π-Meson Capture ....
.....................................Y. Fujimoto, S. Hayakawa & Y. Yamaguchi 576
Remark on the Energy Distribution of Disintegrated μ-Mesons......................
....S. Hayakawa & J. Nishimura 577
Soft Component in Upper Atomosphere..................S. Hayakawa & J. Nishimura 578
Neutron Component in Extensive Air Showers.......................................
.....................................Y. Fujimoto, S. Hayakawa & Y. Yamaguchi 579
High Energy Electronic Component in Extensive Air Showers......................
....Y. Fujimoto & S. Hayakawa 579

Errata:

On the Dirac's Indefinite Metric Space (Vol. 4, p. 358).............N. Shôno & N. Oda 581
An Attempt to Pauli's Regulator (Vol. 4, P. 372) ....Y. Katayama 581

Vol. 5, No. 1 January~February 1950

A Note on the Eigenvalue Problem in Crystal Statistics....Yoichiro Nambu 1
Five Dimensional Approach to Regularized Quantum Electrodynamics.....
.... Yasuhisa Katayama, Katuro Sawada & Shuji Takagi 14
On the Decay of Heavy Mesons. II ——*Case of the Symmetrical Interaction*——...............Seibun Sasaki, Sadao Oneda & Shoji Ozaki 25
Spinors in Five Dimensions...............................Ken-iti Gotô 42
On the Lattice Polarization induced by Electronic Motion...............
.... Mokichiro Nogami 56
On an Approximate Solution of the Many Body Problem of Fermi-Dirac Particles.................................Mokichiro Nogami 65

The Observability of the C-Meson .... Shuzo Ogawa 72
Note on Very Large Cosmic-Ray Stars .... Yoichi Fujimoto & Yoshio Yamaguchi 76
The Use of the Proper Time in Quantum Electrodynamics. I .... Yoichiro Nambu 82
On the Convergence of the Perturbation Method. II-1 .... Tosio Kato 95
On the Nuclear Forces .... Hiroshi Enatsu 102
Note on the Self-Energy and Self-Stress. I .... Katuro Sawada 117

Letters to the Editor:

Linearization of Minkowski Space and Five-Dimensional Space .... K. Imaeda 133
Note on the High Energy Neutron-Proton Scattering .... S. Hiroishi & H. Tanaka 134
Density Matrix and New Configuration Space .... T. Nishiyama 135
Meson Production by X-Ray .... Z. Koba, T. Kotani & S. Nakai 137
A Note on the Mixed Shower .... S. Ogawa 138
On the Integrability Condition of Tomonaga-Schwinger Equation .... Z. Koba 139
The Range and the Mean Free Path of High Energy Nucleons in Nuclear Matter .... Y. Fujimoto & Y. Yamaguchi 141
Notes on High Energy Nuclear Evaporation .... Y. Yamaguchi 142
Note on High Energy induced Fission of Bi .... Y. Yamaguchi 143
On the Origin of Electronic Rays with Moderate High Energy .... Y. Fujimoto & S. Hayakawa 144
Note on Varitrons .... S. Hayakawa 145
The Decay of a $\tau^{\pm}$ Meson into $\pi^{\pm}$ and π_0 Meson .... H. Fukuda & Y. Miyamoto 147
The Decay of a $\tau^{\pm}$ Meson into a $\pi^{\pm}$ Meson and a Photon .... H. Fukuda & Y. Miyamoto 148
On the Electromagnetic Properties of Nucleons .. M. Taketani, S. Machida & T. Tamura 150
The Covariant Formalism of the Theory of Damping .... T. Miyazima, M. Sasaki, R. Suzuki & N. Fukuda 152
A Remark on the Problem of Gauge-Invariancy .... H. Umezawa & R. Kawabe 153
On the Spur Calculations in Quantum Mechanics .... K. Nishijima 155
Quantum Theory of Generalized Local Fields .... S. Kanesawa 157
Excess Electrons in Lower Atmosphere and γ-Decay of Neutral Mesons .... S. Hayakawa 158
On the Concept of the Nuclear Potential .... K. Baba, D. Ito, T. Miyazima & M. Sasaki 159
On the Interaction between Nuclear-Vibrational and Electronic States .... H. Narumi & Y. Takano 160
On the Neutron-Proton Scattering .... M. Watanabe, J. Miida & M. Sato 162

Contents and Authors Index to Volume 4 .... i–x

Vol. 5, No. 2 March～April 1950

On the Decay of Heavy Mesons. III —*Case of the Unsymmetrical Interaction*— ....Sadao Oneda, Seibun Sasaki & Shoji Ozaki 165

The Statistics of Honeycomb and Triangular Lattice. I...Kodi Husimi & Itiro Syozi 177

On the Integrability Condition in the "Super-Many-Time Theory" ....Kazuhiko Nishijima 187

The Electronic Component in Extensive Air Showers.................................Yoichi Fujimoto, Satio Hayakawa & Yoshio Yamaguchi 196

On the Convergence of the Perturbation Method. II-2..........Tosio Kato 207

Note on the Theory of the Frequency Spectrum of Crystalline Solid..Tuto Nakamura 213

Proton-Neutron Concentration Ratio in the Expanding Universe at the Stages preceding the Formation of the Elements....Chushiro Hayashi 224

Note on the Self-Energy and Self-Stress. II ....Katuro Sawada 236

Theory of Color Centers in Ionic Crystals. I—*Electronic States of F-Centers in Alkali Halides*—......Teturo Inui & Yasutada Uemura 252

On the Relativistically Improved Integration in Perturbation Theory —*Its Meaning in Feynman Theory*— .... Hiroomi Umezawa & Rokuo Kawabe 266

Problems of Ambiguity in Quantum Field Theory......Yasuhisa Katayama 272

On the Nature of τ-Mesons. I..Hiroshi Fukuda, Satio Hayakawa & Yoneji Miyamoto 283

Letters to the Editor:

On the Decay of a Heavy Meson into Lighter Mesons....S. Ozaki, S. Oneda & S. Sasaki 305

Effect of Nuclear Motion on the Fine Structure of Hydrogen ....T. Isidu 307

On the Electromagnetic Properties of Mesons ....T. Kinoshita & Y. Nambu 307

Nonsingular Tensor Force in Pseudoscalar Meson Theory............S. Endo & S. Tani 310

On the μ-Meson Decay ....S. Ogawa & S. Kamefuchi 311

Anomalous Magnetic Moment of the Nucleon ....E. Yamada 312

The East-West Effect of the Cosmic-Ray in the Upper Atmosphere ....S. Ogawa & Y. Nagahara 314

A Picture for Cosmic-Ray Stars..........................Y. Fujimoto & S. Hayakawa 315

Diffusion of the Nucleon Component ....Y. Fujimoto 316

Nucleon-Nucleon Interaction at High Energies.. Y. Fujimoto, S. Hayakawa & Y. Yamaguchi 318

Note on the Interaction of Meson with Nucleon .... S. Hayakawa 319
Relativistic Covariance in the Quantum Electrodynamics .... J. Yukawa, N. Oda & H. Umezawa 320
Derivation of the Interaction Potential from Field Theory .... Y. Nambu 321
On the Second Maximum of the Rossi Transition Curve. I ...... T. Kameda & I. Miura 323
On the Second Maximum of the Rossi Transition Curve. II .... I. Miura & T. Kameda 325
Interpretation of the Second Maximum of Rossi Curve .... S. Hayakawa & J. Nishimura 326
A Remark on the Transition Curve of Cosmic Ray Showers .... J. Nishimura 328
The Conduction Electron with Low Energy in Ionic Crystals .... A. Morita 329
On the Conception of the Energy Band in the Perturbed Periodic Potential .... S. Katsura, T. Hatta & A. Morita 330
Note on the Elimination of the Normal-Dependent Part from the Hamiltonian .... K. Nishijima 331
The Effect of Exclusion Principle on the Nucleon-Nucleon Scattering in Nuclear Matter .... Y. Yamaguchi 332
On the Anomalous Magnetic Moment of Nucleon in Vector and Pseudovector Meson Theory .... S. Hori & K. Sawada 333
A Note on the C-Meson Hypothesis .... T. Kinoshita 335
Note on Five-Dimensional Space and the Self-Energy of Electron .... Y. Katayama & S. Takagi 336
Radiative Correction to Decay Processes. II .... T. Nakano, Y. Watanabe, S. Hanawa & T. Miyazima 338

Errata:

On the Concept of the Nuclear Potential (Vol. 5, p. 159) .... K. Baba, D. Ito, T. Miyazima & M. Sasaki 339

Vol. 5, No. 3 May～June 1950

The Statistics of Honeycomb and Triangular Lattice. II .... Itiro Syozi 341
On the Nature of τ-Mesons. II .... Hiroshi Fukuda, Satio Hayakawa & Yoneji Miyamoto 352
On the Decay of a Heavy Meson into Lighter Mesons .... Shoji Ozaki 373
Theory of Color Centers in Ionic Crystals. II ——*The Temperature Dependence of F-Bands in Alkali Halides*—— .... Teturo Inui & Yasutada Uemura 395
On the Elimination of the Normal-Dependent Part from the Hamiltonian .... Kazuhiko Nishijima 405
The Mutual Repulsive Potential between Argon Atoms .... Makoto Kunimune 412

On the East-West Effect of the Cosmic-Radiation in the Upper Atmosphere ....Shuzo Ogawa & Yukio Nagahara 428

On the Covariant Formalism of the Quantum Theory of Fields. I...Ryoyu Utiyama 437

Radiative Corrections to Decay Processes. I ——*The Meson Decay*—— ....Sigeo Hanawa & Tatuoki Miyazima 459

On the Interaction of Mesons with the Electromagnetic Field. I.. Tôichirô Kinoshita 473

Letters to the Editor:

On the Positive Excess of the Hard Component in Cosmic-Ray................S. Ogawa 489

The Determination of the Multiplicity and the Spectrum of the Meson produced by the Nucleon-Nucleon Collision..S. Ogawa 490

On the New Mode of Interaction between Spinor Fields..S. Ozaki, S. Oneda & S. Sasaki 491

On Mixed Field Theories and Vacuum Polarization.......................S. Kanesawa 492

Meson Production by X-Ray (*Errata for* Vol. 5, p. 137) ....Z. Koba, T Kotani & S. Nakai 491

Cosmic-Ray Underground.....................S. Hayakawa, K. Mano & T. Miyazima 495

Structure of Electron in λ-Process...K. Sawada 497

The Fast Protons in π^--Meson Stars......Y. Fujimoto, K. Takayanagi & Y. Yamaguchi 498

A Model for the Condensation Phenomena.....................S. Katsura & H. Fujita 500

Order of Magnitude Theory of the Depression of Coulomb Barrier Height in Highly Excited Nuclei...Y. Yamaguchi 501

Some Remarks on the Relativistic Quantum Field Theory .... T. Nagakura 502

On the Production of γ-Rays accompanied by the Absorption of π-Meson by a Proton ....S. Ogawa & E. Yamada 503

Ground State of Deuteron according to Pseudoscalar Meson Theory..G. Araki & Y. Mori 505

Vol. 5, No. 4 July～August 1950

Production of Scalar and Pseudoscalar Mesons by Photons....Gentaro Araki 507

Meson Fields and Nuclear Forces ....L. Rosenfeld 519

The Yukawa Theory of Nuclear Forces in the light of Present Quantum Theory of Wave Fields.........................Werner Heisenberg 523

On the Connection between Spin and Statistics .... Wolfgang Pauli 526

Remarks on Bloch's Method of Sound Waves applied to Many-Fermion Problems....................................Sin-itiro Tomonaga 544

High Energy Nuclear Events . . . . Enrico Fermi 570
Nuclear Saturation Phenomena deducible from Pair Theories . . . . Gregor Wentzel 584
The Reversal of Time and the Quantization of the Longitudinal Field in Quantum Electrodynamics . . . . K. Bleuler & W. Heitler 600
On Some Developments in Non-Local Field Theory . . . . Claude Bloch 606
Force Potentials in Quantum Field Theory . . . . Yoichiro Nambu 614
On the Scattering of π-Mesons by Nucleons . . . . J. Ashkin, A. Simon & R. Marshak 634
On the Production of Cosmic Ray Mesons . . . . Yoichi Fujimoto, Hiroshi Fukuda, Satio Hayakwa & Yoshio Yamaguchi 669
On the Applicability of the Method of the Mixed Fields in the Theory of the Elementary Particles . . . . Shoichi Sakata & Hiroomi Umezawa 682
A New Interpretation of the Negative Energy Bose Field . . . . Yasutaka Tanikawa 692
Note on a Lorentz-Invariant Integration in the Quantum Field Theory . . . . Ziro Koba 696
Canonical Theory of Quantum Electrodynamics . . . . Kodi Husimi & Ryoyu Utiyama 718
On the Method of the Theory of Elementary Particles . . . . Mituo Taketani, Seitaro Nakamura & Muneo Sasaki 730
Remarks on the Field Theory . . . . Tatuoki Miyazima 735
Analysis on the Two Meson Theory . . . . Seitaro Nakamura, Hiroshi Fukuda, Ken-ichi Ono, Muneo Sasaki & . . . . Mituo Taketani 740

Vol. 5, No. 5 September～October 1950

On the Interaction of Mesons with the Electromagnetic Field. II . . . . Tôichirô Kinoshita & Yoichiro Nambu 749
On the Problem of Gauge-Invariancy and Divergence in the Theory of Elementary Particles. I . . . . Hiroomi Umezawa & Rokuo Kawabe 769
High Energy Nuclear Evaporation . . . . Yoichi Fujimoto & Yoshio Yamaguchi 787

Production of π-Mesons in Nucleon-Nucleon Collisions near the Threshold Energy..............................Hiroshi Fukuda & Gyo Takeda 800
On the Generalized Transformation Function and the Integrability Condition ....Kazuhiko Nishijima 813
Integral Equations between Distribution Functions of Molecules ..Syu Ono 822
Theory of the Temperature Effect of Electronic Energy Bands in Crystals. I ....Toshinosuke Muto & Seiichi Ôyama 833
Cosmic-Ray Underground. III..
I................Satio Hayakawa, Koiti Mano & Tatuoki Miyazima 844
The Covariant Theory of Radiation Damping. I —*General Formalism*— ....Nobuyuki Fukuda & Tatuoki Miyazima 849
On the Anomalous Magnetic Moment of Meson...............Yôrô Ôno 861
Effect of Nuclear Binding on Meson Production...................... ....Y. Fujimoto, K. Nishijima, T. Okabayashi, K. Takayanagi & Y. Yamaguchi 870
On the Interaction of Mesons and Nucleons ....Hiroshi Enatsu 883

Letters to the Editor:

Notes on Fluctuation in Nuclear Evaporation Process....K. Takayanagi & Y. Yamaguchi 894
On the Stars of Light Nuclei...Y. Yamaguchi 896
On the Effect of γ-Ray to the Cosmic-Ray Underground..........S. Ogawa & S. Miura 897
The Lateral and Angular Distribution of Cascade Showers ..J. Nishimura & K. Kamata 899
On the Equivalence of Pseudoscalar and Pseudovector Coupling Constants in Pseudoscalar Meson Theory ....M. Sugawara & Y. Ôno 901
On the *D*-Function of Non-Local Fields ....Y. Ôno & M. Sugawara 902
Effects of Nuclear Motion on the Fine and the Hyperfine Structure of Hydrogen...... .... T. Isidu 904
On the Nuclear Stars..Y. Yamaguchi 904
On the Positron Theory of Vacuum ....Y. Katayama 906

Vol. 5, No. 6 November～December 1950

An Algebraic Theory of the Density Matrix. I ....Kodi Husimi & Toshiyuki Nishiyama 909
Remarks on Bethe's Neutral Theory of Nuclear Force .... Masao Sugawara 920

On the Negative π-Meson Capture ...K. Aidzu, Y. Fujimoto, H. Fukuda, S. Hayakawa, K. Takayanagi, G. Takeda & Y. Yamaguchi 931
Interpretation of the Second Maximum of Rossi Curve ... Satio Hayakawa & Jun Nihsimura 948
The Multiple Producion of Mesons by High Energy Nucleon-Nucleon Collisions ... Hiroshi Fukuda & Gyo Takeda 957
On the Production of γ-Ray accompanied with the Absorption of π^--Meson by a Proton. I ... Shuzo Ogawa & Eiji Yamada 977
Gauge-Spin Transformations and Wave Equations ... Giiti Iwata 983
On the Decay of a Heavy Dirac Meson .. Hiroshi Fukuda & Satio Hayakawa 993
Some Remarks on the Condensation Phenomena ... Shigetoshi Katsura & Hisaaki Fujita 997
On the Mechano-Caloric Effect in Liquid Helium II ... Sadao Nakajima & Masao Shimizu 1010
Radiative Correction to Decay Processes. II —*Beta Disintegration of Nucleon*— ... Tadao Nakano, Yôiti Watanabe, Sigeo Hanawa & Tatuoki Miyazima 1014
Ambiguities in Quantized Field Theories ... Hiroshi Fukuda & Tôichirô Kinoshita 1024
Notes on Dirac's New Quantization Method in the Field Theory ... Toshinosuke Muto & Kenzo Inoue 1033

Letters to the Editor:

Note on the Infrared Catastrophe ... T. Kinoshita 1045
Note on the Magnetic Resonance Absorption in Paramagnetic Salts ... K. Yosida 1047
Neutron Cross Section and Nuclear Shell Structure ... S. Yamabe & J. Sanada 1049
Note on the Classical Equations of Motion of Nucleons ... H. Kanazawa 1050
Photo-Meson Production and Nucleon Isobar ... Y. Fujimoto & H. Miyazawa 1052
Note on the Energy-Momentum Tensor ... Y. Katayama 1054
On Yukawa's Theory of Non-Local Field ... O. Hara & H. Shimazu 1055

Contents and Author Index to Volume 5 ... i x

Vol. 6, No. 1 January~February 1951

An Algebraic Theory of the Density Matrix. II ...... Toshiyuki Nishiyama 1

On the Theory of Cooperative Phenomena ....
.... Tomoyasu Tanaka, Hiroshi Katsumori & Soichiro Toshima 17
Interaction of μ Meson with Matter. I ——*Nuclear Excitation by Electromagnetic Interaction*—.... Toshinosuke Muto & Makoto Tanifuji 27
Note on the Eigenvalue Problem in the Quantum Field Theory ....
.... Kazuhiko Nishijima 37
Effects of Nuclear Motion on the Fine and the Hyperfine Structure of Hydrogen. I .... Takehiko Isidu 48
Theory of the Temperature Effect of Electronic Energy Bands in Crystals. II .... Toshinosuke Muto & Seiichi Ôyama 61
On the Covariant Formalism of the Quantum Theory of Fields. II ....
.... Ryoyu Utiyama 65
Nuclear Disintegration caused by Cosmic-Rays ....
.... Yoichi Fujimoto & Satio Hayakawa 96
On the Problem of Covariance in Quantum Electrodynamics. I ....
.... Jiro Yukawa & Hiroomi Umezawa 112
Two Fluid Theory of Liquid Helium II below 1°K ....
.... Sadao Nakajima & Masao Shimizu 122
On Tensor Forces and Saturation Requirements .... Hideo Kanazawa 126

Letters to the Editor:

On the Absorption of Negative π-Meson by Proton. II ....
.... E. Yamada, Y. Nagahara & S. Ogawa 131
Some Remarks on the Non-Local Field Theory .... Z. Tokuoka & Y. Katayama 132
On the Difference between Local and Non-Local Fields .... H. Yukawa 133

Errata:

Note on the Infrared Catastrophe (Vol. 5, p. 1045) .... T. Kinoshita 134

Vol. 6, No. 2 March～April 1951

Electronic States of C_2-Molecule. I ——*Interaction between p-Electrons*——
.... Gentaro Araki, Simpei Tutihasi & Wataro Watari 135
Effects of Nuclear Motion on the Fine and the Hyperfine Structure of Hydrogen. II .... Takehiko Isidu 154

Mesonic Processes in Two-Nucleon System .... Yoichi Fujimoto & Yoshio Yamaguchi 166

Note on the Direct Interaction between Spinor Fields .. Susumu Kamefuchi 175

Behavior of D-Function in Yukawa's Non-Local Field Theory .... Yôrô Ôno & Masao Sugawara 182

Pseudoscalar Meson Theory and Ground State of Deuteron .... Gentaro Araki & Yukio Mori 188

On the Production of Mesons by X-Rays .... Kô Aidzu, Yoichi Fujimoto & Hiroshi Fukuda 193

On the Problem of Covariance in Quantum Electrodynamics. II .... Jiro Yukawa & Hiroomi Umezawa 197

"Integro-Kaŭzeco" en Konverĝa Kvantumteorio de Kampoj .... F. J. Belinfante 202

On the Čerenkov Radiation .... Tosiya Taniuti 207

Non-Hermitian Operators and Eigenfunction Expansions .... Giiti Iwata 216

On the Absorption of the Negative π-Meson by Deuteron .... Shuzo Ogawa, Eiji Yamada & Yukio Nagahara 227

On the Spin of Neutrino .... Ken-ichi Ono 238

A Note on the Pressure Equation of the Two Fluid Model of Helium II .... Tunemaru Usui 244

Letters to the Editor:

On the Star Production by Cosmic-Ray Underground .... S. Miura & S. Ogawa 251

Radiative Corrections to the Anomalous Magnetic Moment of Nucleon in Pseudoscalar Meson Theory .... K. Nakabayasi & I. Sato 252

On the Excited States of Even Nuclei .... H. Horie, M. Umezawa, Y. Yamaguchi & S. Yoshida 254

On the Nuclear Potential in the Meson Theory .... Y. Ataka 256

Production of Vector π-Mesons by High Energy Nucleon-Nucleon Collisions .... K. Ida 258

Remarks on the Production of Cosmic-Ray Mesons .... Y. Yamaguchi 260

On the Mass of Cohesive Meson and the Mass Difference of Nucleons. I .... H. Enatsu & P. Y. Pac 261

On the Accuracy of the Molière Function. I .... J. Nishimura & K. Kamata 262

A Possible Explanation for the Deviations of Nuclear Magnetic Moments from the Schmidt Lines .... H. Miyazawa 263

Vol. 6, No. 3 May~June 1951

Connection between Particle Models and Field Theories. I ——*The Case Spin 1/2*—— ...... Smio Tani 267
On the Matrix Elements of the Beta Decay ...... Mituo Taketani, Seitaro Nakamura, Ken-ichi Ono & Minoru Umezawa 286
Note on Schwinger's Variational Method ...... Tosio Kato 295
Statistics of Kagomé Lattice ...... Itiro Syozi 306
On the Positron Theory of Vacuum ...... Yasuhisa Katayama 309
On Gauge Invariance and Equivalence Theorems ...... Ziro Koba, Nobumichi Mugibayashi & Shinzô Nakai 322
Theory of Antiferromagnetism and Antiferromagnetic Resonance Absorption. I ...... Takeo Nagamiya 342
Theory of Antiferromagnetism and nAtiferomagnetic Resonance Absorption. II ...... Takeo Nagamiya 350
Note on the Magnetic Properties of the FeS_n System ...... Kei Yosida 356
Note on Many Fermion Problems ...... Toshiyuki Nishiyama 366
Effect of Nucleon Recoil on Nuclear Forces ...... Gentaro Araki 379
Upper and Lower Bounds of Scattering Phases ...... Tosio Kato 394
Nuclear Shell Model and the β-Decay Schemes. I ...... Minoru Umezawa, Seitaro Nakamura, Yoshio Yamaguchi & Mituo Taketani 408

Letters to the Editor:

On the Meson Cloud around the Nucleons ...... H. Umezawa, Y. Takahashi & S. Kamefuchi 426
On the Multiple Production of Mesons ...... H. Umezawa, Y. Takahashi & S. Kamefuchi 428
On the Intervals of Na ^2D and Cu ^2F ...... G. Araki & S. Tutihasi 430
Elektronoj Ekvilibraj kun Mezonoj en Malalta Atmosfero ...... Y. Takahashi & T. Miyazima 431
Note on Belinfante's New Theory ...... K. Husimi & R. Utiyama 432
On the Self-Energies of Nucleons. I ...... H. Enatsu 434
On the Mass of Cohesive Meson and the Mass Difference of Nucleons. II ...... H. Enatsu & P. Y. Pac 435
Note on the "Champ Soustractif" of Louis de Broglie ...... S. Endo & H. Kanazawa 436
On the Photo-Meson Production from Heavy Nuclei ...... S. Machida & T. Tamura 437
Remarks on the Neutron-Proton Scattering with Tensor Force ...... Y. Yamaguchi 439
On Internal Pair Creation following Some Beta-Decay ...... T. Nakano 440
Note on Some Calculations in Quantum Field Theory ...... S. T. Epstein 441
Zero-Zero Transition and Electron-Neutron Interaction ...... Y. Yamaguchi 442

On the Absorption of the Negative π-Meson by Deuteron (*Errata for* Vol. 6, p. 227)
.... S. Ogawa, E. Yamada & Y. Nagahara 444

Errata:

Theory of the Temperature Effect of Electronic Energy Bands in Crystals (Vol. 5, p. 833) .... T. Muto & S. Ôyama 445
Note on Dirac's New Quantization Method in the Field Theory (Vol. 5, p. 1033).. T. Muto & K. Inoue 445
Interaction of μ Meson with Matter. (Vol. 6, p 27)......... T. Muto & M. Tanifuji 445
Theory of the Temperature Effect of Electronic Energy Bands in Crystals. II (Vol. 6 p. 61).. T. Muto & S. Ôyama 446
Electronic States of C_2-Molecule. I (Vol. 6, p. 135)..G. Araki, S. Tutihasi & W. Watari 446

Vol. 6, No. 4 July～August 1951

Statistical Thermodynamics of Solutions of Electrolytes and Non-Electrolytes
.... Syu Ono 447
Molecular Theory of Liquid Helium .... Morikazu Toda 458
On the Liquid He^3 and Its Mixture with He^4
.... Morikazu Toda & Akira Ishihara 480
On the Theory of Chemically Reacting Gas .... Kazuo Takayanagi 486
Point of Condensation and the Volume Dependency of the Cluster Integrals
.... Shigetoshi Katsura & Hisaaki Fujita 498
The Effect of Helium 3 Ingredient on the Wave Propagation in Liquid Helium II .... Shoichiro Koide & Tunemaru Usui 506
Transformation Functions in the Complex Domain .... Giiti Iwata 524
Note on Very Large Cosmic-Ray Stars. II .... Yoshio Yamaguchi 529
On the Crystal Statistics of Two-Dimensional Ising Ferromagnets
.... Tsunenobu Yamamoto 533
The Vacuum in Quantum Electrodynamics
.... Hiroomi Umezawa & Susumu Kamefuchi 543
On the Production of Negative Protons
.... Mituo Taketani & Shigeru Machida 559
Photo-Meson Production from Deuteron...Shigeru Machida & Taro Tamura 572
On the Method of the Theory of Nuclear Forces
.... Mituo Taketani, Seitaro Nakamura & Muneo Sasaki 581
Note on the Longitudinal and Scalar Photons
Ryoyu Utiyama, Tsutomu Imamura, Sigenobu Sunakawa & Taro Dodo 587

β-Ray Spectrum and ft-Values in the Forbidden Transitions .... Seitaro Nakamura, Hisao Takebe & Minoru Umezawa 604

Letters to the Editor:

Generalized Furry's Theorem for Closed Loops. I ....K. Nishijima 614

On the Nature of V-Particles. I..............Y. Nambu, K. Nishijima & Y. Yamaguchi 615

On the Nature of V-Particles. II............Y. Nambu, K. Nishijima & Y. Yamaguchi 619

The Effect of He^3 Ingredient on the Thermal Rayleigh Disc Torque .... S. Koide & T. Usui 622

Effects of Tensor Forces on the Elastic Scattering of Neutrons by Deuterons .... H. Horie, T. Tamura & S. Yoshida 623

Meson Current around the Nucleon.................................. Y. Takahashi 624

On the Interaction of Cohesive Field.. K. Sawada 626

On the Exchange Current.. Y. Ataka 627

On the Accuracy of the Molière Function. II............J. Nishimura & K. Kamata 628

On a Possible Model of the V-Particle ....K. Aidzu & T. Kinoshita 630

A Model for V-Particles ....H. Miyazawa 631

Note on the Theory of V-Particles and τ-Mesons ....S. Oneda 633

On the Nuclear Forces and the Ground State of Deuteron .... M. Taketani, S. Ohnuma & S. Koide 635

Note on Some Type of Interaction ....K. Sawada 637

Meson Theory of Nuclear Forces.............M. Taketani, S. Machida & S. Ohnuma 638

β-Matrix Formalism as $\kappa\rightarrow 0$ ....D. C. Peaslee 639

Vol. 6, No. 5 September～October 1951

On the Self-Energies of Nucleons. II.....................Hiroshi Enatsu 643

On the Mass Difference of Nucleons and the Cohesive Mesons .... Hiroshi Enatsu & Pong Yul Pac 665

Recoil Effect on Electron-Proton Forces and Inapplicability of Energy Law .... Gentaro Araki & Sigeru Huzinaga 673

Relativity of Representation Coordinates and Its Consequences. I..Giiti Iwata 684

On the Antiferromagnetism of Single Crystals ....Kei Yosida 691

On the Zero Point Entropy of Methane Crystal ....Takeo Nagamiya 702

Quantum-Statistical Theory of Liquid Helium...........Takeo Matsubara 714

On the Self-Energies of Mesons.......Kazuo Yamazaki & Hiroshi Enatsu 731

The Scattering of Mesons by Nuclear Particles. I .... R. C. Majumdar, A. S. Apte & M. K. Sundaresan 737

Relativistic Two-Body Problem in Quantum Theory .... Kiyoshi Sakuma, Naomi Shôno & Tadashi Ouchi 748

On the Path Integral and Its Application..................Yasuhide Murai 762
The Phenomenological Analyses of Mesonic Processes..Yoshio Yamaguchi 772
Nuclear Interaction of μ-Meson..
..............Hiroshi Fukuda, Yoichi Fujimoto & Masatoshi Koshiba 788
Deviations of Nuclear Magnetic Moments from the Schmidt Lines........
....Hironari Miyazawa 801
On the Adiabatic Nuclear Potential. I................Kazuhiko Nishijima 815
On the Quadrupole Moments of Light Nuclei ....
.... Hisashi Horie & Shiro Yoshida 829
On Solutions of New Field Equations of Einstein and Those of Schrödinger
......................Hyôitirô Takeno, Mineo Ikeda & Shingo Abe 837
Production of Charged π-Meson by γ-Ray ——*Higher Order Corrections*——
......................Ziro Koba, Tsuneyuki Kotani & Shinzô Nakai 849

Letters to the Editor:

S-Matrix and Nucleon Isobar ....S. Kamefuchi, H. Nakai & R. Kawabe 891
V-Particle as a Composite One ....H. Suura 893
π^0-Meson Production by Gamma-Ray ....S. Minami 895
On the Interaction of the Lattice Vibrations with the Conduction Electrons.........
....T. Nishiyama 897
On the Energy-Momentum Tensor of Bopp-Type Non-Local Fields ....Y. Ôno 898
The Quantum Mechanics of Assemblies of Interacting Particles..........T. Matsubara 899
A Note on the Fermi Theory of Meson Production ....Y. Fujimoto & T. Tamura 901
Pri la Koncepto de la Libera Kampo...S. Hori 903
On the Fourth-Order Nuclear Potential ....S. Machida, S. Ohnuma & M. Taketani 904
Note on the Cascade Function for Heavy Elements ....J. Nishimura & K. Ida 905
Statistics of Two-Dimensional Ising Lattices of Chequered Types.........T. Utiyama 907

Vol. 6, No. 6 November~December 1951

On the Adiabatic Nuclear Potential. II ....Kazuhiko Nishijima 911
On the Energy-Momentum Tensor of Bopp-Type Non-Local Fields........
....Yôrô Ôno 925
Pressure Effect on the Second Sound Velocity in Liquid Helium II......
.................Atsushi Kondoh, Sadao Nakajima & Masao Shimizu 939
lectronic States of C_2-Molecule. II ——*Effect of 2s-Shells*—— ....
.... Gentaro Araki & Wataro Watari 945

Electronic States of C_2-Molecule. III ——*Numerical Values and Reduction Formulas of Integrals*—— ....Gentaro Araki & Wataro Watari 961
On the Hydrodynamics of Degenerating Bose-Einstein Gases .... Sadao Nakajima 980
On the So-called Pseudo-Spinors .... Ken-iti Gotô 990
Note on Bloch-Nordsieck's Method ... Gyo Takeda, Yasutaka Tanikawa, Tosiya Taniuti & Keiiti Saeki 994
Meson-Nucleon Scattering ....Yoichiro Nambu & Yoshio Yamaguchi 1000
On the Mesonic Correction to the β-Decay .... Tsuneyuki Kotani, Shigeru Machida, Seitaro Nakamura, Hisao Takebe, Minoru Umezawa & Tets Yoshimura 1007

Letters to the Editor:

Wave Equations in de Sitter Space ....K. Gotô 1013
V-Particles and Nuclear Phenomena ....S. Oneda 1014
Nucleonic Components at High Altitudes ....K. Sakihama & S. Takagi 1017
"Infrared Catastrophe"-like Divergency in Meson-Decay Process ....D. Ito 1020
On the Divergence of the Transition Probability due to Energy Conservation in Intermediate States ....D. Ito 1023
Divergences arising from Nuclear Forces .... T. Nakano & K. Nishijima 1024
On the Plasma-like Oscillation .... T. Nishiyama 1025
A Commentary to Yosida's Theory on FeS_n ....S. Miyahara 1026
Generalized Furry's Theorem for Closed Loops. II ....K. Nishijima 1027
On the Short μ-Meson Tracks from π-Meson Decays .... T. Nakano, J. Nishimura & Y. Yamaguchi 1028
On the *Z*-Dependence of the Positive-Negative Ratio of the Mesons Produced by Photons on Nuclei...S. Machida & T. Tamura 1030
On the High Energy Nuclear Photoelectric Reaction ....S. Yoshida 1032
Contents and Author Index to Volume 6 .... i-x

Vol. 7, No. 1 January 1952

On the Nucleonic Components producing Large Cosmic-Ray Bursts under Thick Shield ....Tadashi Kameda & Masami Wada 1
Theory of Some Magnetic Properties of Cobalt Tutton Salts .... Kenjiro Kambe, Shoichiro Koide & Tunemaru Usui 15
On the Antiferromagnetism of $CuCl_2 \cdot 2H_2O$ Single Crystal .....Kei Yosida 25

The Unitary Transformation and the Quantization .... Giiti Iwata 39
The Meson Theory of Nuclear Forces. I ——*The Deuteron Ground State and Low Energy Neutron-Proton Scattering*—— .... Mituo Taketani, Shigeru Machida & Shoroku Ohnuma 45
Remarks on the Adiabatic Nuclear Potential.. Shigeru Machida & Kazuhiko Nishijima 57
Neutral-Meson Production by Gamma-Ray .... Shigeo Minami 69
Meson Reactions in Deuterium and Meson-Nucleon Scattering .... Yoshio Yamaguchi 93
Meson Production by γ-Rays from Deuterium .... Yosio Saito, Yôiti Watanabe & Yoshio Yamaguchi 103

Letters to the Editor:

The Burst Production by the μ-Meson .... H. Komori, K. Miyanaga & S. Ogawa 122
Note on the Statistical Theory of the Meson Shower........................ S. Takagi 123
Zero-Zero Transitions .... S. D. Drell & M. E. Rose 125
On the Approximate Solutions of the Unified Field Theory of Einstein and Schrödinger .... M. Ikeda 127
Group Theoretical Aspects in S-Matrix Theory .... D. Ito, H. Tanaka, Y. Watanabe, & M. Yamazaki 128

Vol. 7, No. 2 February 1952

On Lagrangian and Hamiltonian Formalism .... Yoichiro Nambu 131
On the Analytic Behaviour of Dyson Transformation Function .... Hiroshi Suura, Yoichi Mimura & Toshiei Kimura 171
On the Theory of Cascade Showers. I ... Jun Nishimura & Koichi Kamata 185
Theory of Super-Quantization of Quantized Field and Its Applications .... Yasutaka Tanikawa 193
Non-Additivity of Nucleon Mangnetic Moment in the Deuteron.. Hironari Miyazawa 207
Relativistic Two-Body Problem.............................. Hideji Kita 217
On the Rate of Irreversible Production of Entropy.... Natsuki Hashitsume 225
Statistical Mechanics of Cooperative Phenomena .... Tuto Nakamura 241
On Yukawa's Theory of Non-Local Field. I ——*The Case of Free Field*—— .... Osamu Hara & Haruo Shimazu 255

Letters to the Editor:

Microwave Resonance in Ferrimagnetic Substance ....N. Tsuya 263
Transformation Function in Quantum Electrodynamics ....Y. Katayama 265

Errata:

Neutral-Meson Production by Gamma-Ray (Vol. 7, p. 69) ....S. Minami 267
Meson Reactions in Deuterium and Meson-Nucleon Scattering (Vol. 7, p. 93) ....Y. Yamaguchi 267

Vol. 7, No. 3 March 1952

Nuclear Cross Sections for Fast Neutrons and Interaction between .... High Energy Nucleons ....Kojiro Ida 269
On the Theory of the Dielectric, Piezoelectric and Elastic Properties of $NH_4H_2PO_4$.................................Takeo Nagamiya 275
On the Structure of Heavy Nuclei.....................Osamu Miyatake 285
The Mass Variation with Velocity in Bopp's Unitary Field Theory. I..... ....Masao Sugawara 303
Beta-Spectrum of the Third Forbidden Transition of Rb^{87} ....Yukio Tomozawa, Minoru Umezawa & Seitaro Nakamura 317
Note on the Forbidden Transitions in Beta-Decay...................... .... Yukio Tomozawa & Minoru Umezawa 323

Letters to the Editor:

"Weisskopf-Wigner Method" in *S*-Matrix Formalism............................D. Ito 326
On the Green-Functions of the Quantum Electrodynamics .... R. Utiyama, S. Sunakawa & T. Imamura 328
Note on the Physical Connection between Electron's Electromagnetic Mass and Its Charge..K. Baba 328
The General Discussion of the Self-Stress .... Y. Takahashi & H. Umezawa 330

Vol. 7, No. 4 April 1952

Orthogonal Functions in the Complex Domain ....Giiti Iwata 333
Electronic States of Ethylene Molecule.................Tomokazu Murai 345
Disintegration of Light Nuclei by σ-Meson Capture ....S. Enomoto, Y. Fujimoto, S. Horie & Y. Tsuzuki 353
On the Renormalization Theory of the Interaction of Electrons and Photons ....Gyo Takeda 359

On Relativistic Theory of Rotating Disk .... Hyôitirô Takeno 367

On the Structure of the Interaction of the Elementary Particles. I ——*The Renormalizability of the Interactions*—— .... Shoichi Sakata, Hiroomi Umezawa & Susumu Kamefuchi 377

Radiative Correction to Decay Processes. III ——*Forbidden Beta-Transitions caused by Radiation Processes*—— .... Sigeo Hanawa & Tatuoki Miyazima 391

On the Renormalization in Quantum Electrodynamics .... Susumu Kamefuchi & Hiroomi Umezawa 399

On the Density Matrix in Hartree-Field. I .... Hiroshi Itô 406

Letters to the Editor:

On the Velocity Operator in Quantum Mechanics .... T. Nishiyama 417

On the Role of Longitudinal and Scalar Photons .... T. Kimura & Y. Miyachi 419

Vacuum Polarisation by Spin One Particles .... J. McConnell 421

Errata:

On the Nucleonic Components producing Large Cosmic-Ray Bursts under Thick Shield (Vol. 7, p. 1) .... T. Kameda & M. Wada 422

Vol. 7, Nos. 5, 6 May~June 1952

Theory of the Antiferromagnetic Resonance Absorption in $CuCl_2 \cdot 2H_2O$ .... Kei Yosida 425

Operator Calculus of Quantized Operator .... Izuru Fujiwara 433

Operator Calculus in Quantized Field Theory .... Kazuo Yamazaki 449

Notes on the Decay of the Neutron. I .... Tsuneyuki Kotani, Hisao Takebe, Minoru Umezawa & Yoshio Yamaguchi 469

On a Relativistic Integral Equation for Bound States .... Chushiro Hayashi & Yasuo Munakata 481

Generalization of Statistics .... Taisuke Okayama 517

Excitation Function for Meson Production by γ-Ray .... Shigeo Minami 535

On the Spin Wave Theory of Magnetic Susceptibility and Resonance Absorption in Antiferromagnetics .... Tuto Nakamura 539

On the Structure of the Interactions of the Elementary Particles. II ——*Does the Interaction of the Second Kind exist in the Nature?*—— .... Hiroomi Umezawa 551

The Mass Variation with Velocity in the Bopp's Unitary Field Theory. II .... Masao Sugawara & Sakae Minami 563
The Capture Process of π-Mesons by Deuterons .... Yoshiro Matsuzaki & Muneo Sasaki 573
On the Well-ordered S-Matrix .... Shoichi Hori 578

Letters to the Editor:

Note on the Non-Relativistic Limit of the Compton Scattering .... S. Goto 585
Seasonal Variation of Large Cosmic-Ray Bursts .... T. Kameda & M. Wada 586
On the Equivalence Principle .... T. Dodo & R. Utiyama 589
Remark on the Self Energy Problem of the Photon .... O. Hara & H. Shimazu 591
On the Model of V-Particle and Meson-Nucleon Scattering .... K. Sawada 592
An Empirical Mass Spectrum of Elementary Particles .... Y. Nambu 595
On the New Description of Quantum-Mechanics .... H. Shimooda 597
Excited States of Elementary Particle and the Quantization of Elementary Particles .... M. Sugawara 599
Convergence Problem in Quantum Electrodynamics .... Y. Katayama & K. Yamazaki 601

Errata:

Disintegration of Light Nuclei by σ-Meson Capture (Vol. 7, p. 353) .... S. Enomoto, Y. Fujimoto, S. Horie & Y. Tsuzuki 603

Contens and Author Index to Volume 7 .... i-vi

Vol. 8, No. 1 July 1952

Statistical Mechanics of Phase Transition .... Syu Ono 1
Interaction of μ-Meson with Matter. II —*Spontaneous Decay of Negative μ-Meson*— ... Toshinosuke Muto, Makoto Tanifuji, Kenzo Inoue & Takeo Inoue 13
Note on the Non-Local Interaction .... Naomi Shôno & Nobuo Oda 28
On the Angular Distribution of D+D Nuclear Reaction Products .... Yoshihiro Nakano 39
Some Remarks on the Photo-Disintegration of Deuteron. I .... Yukio Nagahara & Jun Fujimura 49
The S Matrix Method in Pion Reactions .... Tadao Nakano & Kazuhiko Nishijima 53
On the Theory of the Green-Functions in Quantum-Electrodynamics .... Ryoyu Utiyama, Sigenobu Sunakawa & Tsutomu Imamura 77

On the Inelastic Collision between Molecules. I........Kazuo Takayanagi 111
Notes on the Decay of the Neutron II. ....
Tsuneyuki Kotani, Hisao Takebe, Minoru Umezawa & Yoshio Yamaguchi 120

Letters to the Editor:

Non-Local Theory of Nucleon-Meson Field ....N. Shôno 133
The Transition Effect of the Star Production ....H. Komori 134
The Asymptotic Expression for the Structure Function of Interacting Particles ......
....H. Matsuda 136
Radiative Correction to β-Decay Matrix Element ....S. Kamefuchi 137
The State of Solid Methane as inferred from Nuclear Magnetic Resonance..K. Tomita 138
An Interpretation of the Meso-Disintegration of the Deuteron in terms of the Strong Coupling Meson Theory ....S. Matsuyama & H. Miyazawa 140

Errata:

On the Well-ordered S-Matrix (Vol. 7. p. 578) ....S. Hori 142
On a Relativistic Integral Equation for Bound States (Vol. 7, p. 481) ....
....C. Hayashi & Y. Munakata 142

Vol. 8, No. 2 August 1952

On the Formulation of Quantum Mechanics associated with Classical Pictures ....Takehiko Takabayasi 143
Realization of Special Contact Transformations with Static Electromagnetic Fields in Vacuo. I.................................Giiti Iwata 183
On the Self-Stress ....Yasushi Takahashi & Hiroomi Umezawa 193
On the Cosmic-Ray Bursts Underground —*The Interaction of π-Meson with Nucleon*— ....Shuzo Ogawa 205
Some Consequences of Gauge Invariance ....
....................Masaaki Kawaguchi & Nobumichi Mugibayashi 212
Slow Neutrons in the Cosmic Radiation. I..........................
..............................Yoichi Fujimoto & Taro Tamura 221
Theory of the Nuclear Magnetic Relaxation in Crystalline Solids. I
—*Direct Process*— ...Toshinosuke Muto & Mitsukuni Watanabe 231

Letters to the Editor:

Note on the Saturation Properties of Nuclear Forces .... S. Endo & H. Kanazawa 252

A Note on the S-Matrix in the Theory of the Non-Local Interaction .... T. Ouchi 253

Note on the Structure of the Interactions between Unstable Elementary Particles .... S. Oneda 255

Isotopic Spin of Nucleons and Leptons and Anti-Particle Coordinate .... T. Hamada & M. Sugawara 256

Analytical Representation of Spin .... T. Yamamoto 258

Anisotropy in the Antiferromagnetic MnO_2 .... K. Yosida 259

Comparison of Born and Heitler Expansions in a Scattering Problem .... N. Fukuda, T. Kobayashi, Z. Maki & M. Sato 261

Diffusion of the Nucleonic Component in the Atmosphere .... A. Ueda & H. Hasegawa 262

Vol. 8, No. 3 September 1952

A New Attempt on the Self-Energy Problem of the Photon .... Osamu Hara & Haruo Shimazu 265

The Theory of the Dielectric Constant of Ionic Crystals. I .... Jiro Yamashita 280

On Equivalent Observers .... Yoshio Ueno & Hyôitirô Takeno 291

Temperature Effect on the Paramagnetic Resonance in Crystals .... Kenjiro Kambe & Tunemaru Usui 302

On the Spherically Symmetric Space-Times in General Relativity .... Hyôitirô Takeno 317

The Quantum-Statistical Theory of Transport Phenomena. I —*On the Boltzmann-Uehling-Uhlenbeck Equation*— .... Hazime Mori & Syu Ono 327

Effects of Tensor Forces on the Neutron-Deuteron Scattering .... Hisashi Horie, Taro Tamura & Shiro Yoshida 341

On the Electronic Structures of the M-Centers in Alkali-Halide Crystals .... Teturo Inui, Yasutada Uemura & Yutaka Toyozawa 355

Selection Rules for Decays of π-Mesons and V-Particles .... Tetsuo Hamada & Masao Sugawara 363

Letters to the Editor:

On the Equivalence of Moment Method and Fourier Transform Method in the Theory of Spectral Line Shape .... I. Yokota 380
Non-Local Field and Non-Local Interaction ....Y. Katayama 381
Note on Invariancy of Some Fundamental Equations of Physics.............M. Ikeda 382
Linear Meson Wave Equation in de Sitter Space .... S. A. Raje 384
On Yukawa's Theory of Non-Local Field ....H. Shimazu & O. Hara 385

Vol. 8, No. 4 October 1952

Interaction of π-Electrons in the Acetylene Molecule ....
Takashi Nakamura, Kimio Ohno, Masao Kotani & Katsunori Hijikata 387
On Lagrangian Formalism ....Kazuhiko Nishijima 401
On the Magnetism of Magnetic Compounds —*General Treatment of Superexchange Interaction*— ....Masao Shimizu 416
On the β-Ray Angular Correlations.....Masato Morita & Masami Yamada 431
On the β-γ Angular Correlation of Sb^{124}..Masato Morita & Masami Yamada 449
On the Determination of the Elastic Spectra of Solids from Specific Heat Data ....Wolfgang Kroll 457
A Statistical Theory of Linear Dissipative Systems. I..Natsuki Hashitsume 461
The Effect of Damping on Radiative Corrections to Electron Scattering and the Problem of Infrared Catastrophe ..R. C. Majumdar & A. N. Mitra 479

Letters to the Editor:

On the Interaction Representation.....................Y. Takahashi & H. Umezawa 493
Tomonaga Approximation in Meson Theory ....H. Hasegawa 494

Vol. 8, No. 5 November 1952

On the Inelastic Collision between Molecules. II *Rotational Transition of H_2-Molecule in the Collision with another H_2-Molecule*— ......
.... Kazuo Takayanagi 497
The *j-j* Coupling Shell Model ....Minoru Umezawa 509
Electronic States of F_2- and O_2-Molecules ....Wataro Watari 524
Pion Reactions in One Nucleon System and Nucleon Isobars ....

Shigeo Minami, Tadao Nakano, Kazuhiko Nishijima, Hisaichiro Okonogi & Eiji Yamada 531
Phenomenological Explanation of Magnetic Moments of Nucleons in terms of the Excited States of Nucleons ....Masao Sugawara 549
Photodisintegration of the Deuterons at High Energies .....Muneo Sasaki 557

Letters to the Editor:

Principle of Detailed Balance in Quantum Field Theory...................... K. Gotô 565
Note on the Law of Conservation of Heavy Particles ....S. Oneda 568
On the Convergence of the S-Matrix Series..................................S. Hori 569
Generalization of Analytical Spin ....T. Yamamoto 570
Propagation of the Cosmic Radiation through Interstellar Space..........S. Hayakawa 571
On the Corpuscular Aspect of Quantum Theory of Field......M. Namiki & Y. Suzuki 572
π-D Scattering and Strong Coupling Theory............H. Miyazawa & S. Matsuyama 573
A Note on the Gauge Transformation in the Theory of Non-Local Interaction of the Fields.................................. S. Ozaki, S. Nagata & Y. Okamura 574
Note on the Tensor Interaction in Triplet Odd States ....S. Ohnuma 576

Vol. 8, No. 6 December 1952

On the Structure of the Interactions of the Elementary Particles. III ——*On the Renormalizable Field Theory*—— .... Susumu Kamefuchi & Hiroomi Umezawa 579
On the Equivalence of the Particle Formalism and the Wave Formalism of Meson. I......................Zensuke Tokuoka & Hajime Tanaka 599
Calculation of Heteronuclear Molecular Integrals ....Tomokazu Murai & Gentaro Araki 615
Molecular Structure and Absorption Spectra of Carotenoids ....Gentaro Araki & Tomokazu Murai 639
A Quantum Theory of Boson Assemblies. I.........Toshiyuki Nishiyama 655

Letters to the Editor:

Magnetic Moment of Li^6 ....T. Komoda & M. Sasaki 669
The Equation of Motion of a Spinning Particle in a Meson Field ....R. C. Majumdar, S. P. Pandya & S. Gupta 670
On the Meson Wave Equation in de Sitter Space ....K. Gotô 672
On the Interactions of the Second Kind ....S. Kamefuchi & H. Umezawa 675
On the π-P Scattering ....K. Ono 676

Errata:

π-D Scattering and Strong Coupling Theory (Vol. 8, p. 573 The figure in page 576 should be inserted in this article) ....H. Miyazawa & S. Matsuyama 677

Contents and Author Index to Volume 8 .... i-vii

Vol. 9, No. 1 January 1953

On the Origin of Primary Cosmic Radiation .... Tokuji Matsumoto & Masao Sugawara 1

On the Spin Wave Theory of Bloch Wall ....Takehiko Oguchi 7

The General Theory of the Interaction Representation. I ——*The Local Field*——..................Yasushi Takahashi & Hiroomi Umezawa 14

An Algebraic Treatment of the Many Electron Problem ....Huzio Nakano 33

On the Equivalency for Observers in the Special Theory of Relativity.. Yoshio Ueno 74

Letters to the Editor:

Transition Factor in Superexchange Interaction Matrix.....................T. Ohta 85

New Description of Field...Y. Takano 86

The Critical Velocity and Frictions in the Flow of Liquid Helium II ......T. Kasuya 87

Damped Oscillation in the Surface Film of Liquid Helium II ....T. Kasuya 89

Gorter's Friction and Saturation of Surface Flow Rate.....................T. Kasuya 90

Meson Nucleon Scattering ....S. Goto 91

Photo Positive Pion Production ....M. Takasu, S. Goto, J. Fujimura & R. Kawabe 92

Charge Independece of Nuclear Interaction and High Energy Nucleon-Nucleon Scattering .... J. Iwadare 93

The Effect of the Excited States of Nucleons in High Energy Nucleon-Nucleon Scattering .... J. Iwadare 94

Errata:

Photodisintegration of the Deuterons at High Energies (vol. 8, p. 557) ....M. Sasaki 96

Vol. 9, No. 2 February 1953

Realization of Special Contact Transformations with Static Electromagnetic Fields in Vacuo. II...............................Giiti Iwata 97

The Scattering of Gamma-Ray by Nucleon and Nucleon Isobars .... Shigeo Minami 108

Variational Principle in Hydrodynamics . . . . Hirosi Itô 117

Some Remarks on the Photodisintegration of Deuteron. II . . . Jun Fujimura 132

On Yukawa's Theory of Non-Local Field. II ——*The Interaction of Non-Local Fields*—— . . . . Osamu Hara & Haruo Shimazu 137

On the Group of Transformations in Six-Dimensional Space. I . . . . Yasuhisa Murai 147

On the Natural Decay of the Free Neutron . . . . . . Sho Tanaka & Motô Itô 169

Letters to the Editor:

Difficulty of Divergence of the Perturbation Method in the Quantum Theory of Field . . . . R. Utiyama & T. Imamura 181

A Note on Many-Particle Problems . . . . T. Sasakawa 182

On the Relativistic Two-Body Problem . . . . S. Hori 184

On Gauge Invariance in Electrodynamics and the Self-Energy Problems of the Photon . . . . O. Hara & H. Okonogi 184

Vol. 9, No. 3 March 1953

Remarks on the Formulation of Quantum Mechanics with Classical Pictures and on Relations between Linear Scalar Fields and Hydrodynamical Fields . . . . Takehiko Takabayasi 187

New Formulation of One-Body Problem in Quantum Electrodynamics . . . . Mikio Namiki & Yosio Suzuki 223

Miscellanea in Elementary Quantum Mechanics. I . . . . Kodi Husimi 238

A Quantum Theory of Boson Assemblies. II ——*A Classical Approach to Many-Boson Problems*—— . . . . Toshiyuki Nishiyama 245

On the Relations between Beta-Decay Nuclear Matrix Elements . . . . Masami Yamada 268

Comments on an Article of Takabayasi concerning the Formulation of Quantum Mechanics with Classical Pictures . . . . David Bohm 273

On the Lattice Vibration and the Effective Mass of Conduction Electrons . . . . Hideo Kanazawa, Shoichiro Koide & Tamazi Noguchi 288

On the Gauge Invariance of the Neutral Vector Meson Theory . . . . R. J. Glauber 295

On the Transition Amplitude in Quantum Electrodynamics . . . . Shoichi Hori 299

On the Reaction of the Mesonic Proper Field..Shigeo Goto, Rokuo Kawabe & Masashi Takasu 312

Letters to the Editor:

On the "Optical Method" for the Scattering of High Energy Particles by Complex Nuclei..T. Marumori 321
Electormagnetic Shifts of Energy Levels and *C*-Meson Hypothesis............O. Hara 322
On the κ-Meson..K. Inoue 323
Symmetric Fission..T. Sasakawa & T. Sawada 324

Errata:

Principle of Detailed Balance in Quantum Field Theory (Vol. 8, p. 565)......K. Gotô 326
On the Meson Wave Equation in de Sitter Space (Vol. 8, p. 672)............K. Gotô 326
On the Group of Transformations in Six-Dimensional Space. I (Vol. 9, p. 147)..Y. Murai 326

Vol. 9, No. 4 April 1953

On Some Properties of the Interactions between Elementary Particles..Sadao Oneda 327
On the Electron-Neutrino Angular Correlation..............Masato Morita 345
A Theory of Antiferromagnetism. I .....Takehiko Oguchi & Yukio Obata 359
On a Correlation between the Electron Assembly and the Lattice Waves in the Crystal..................Yoshiharu Kitano & Huzio Nakano 370
Miscellanea in Elementary Quantum Mechanics. II..........Kodi Husimi 381
The Heisenberg Theory of Ferromagnetism of the Crystal constituted by the Atoms with Spin One........................Huzio Nakano 403
Models of *V*-Particles............................Kazuhiko Nishijima 414
Difficulty of Divergence of the Perturbation Method in the Quantum Field Theory......................Ryoyu Utiyama & Tsutomu Imamura 431
On the Scattering Problem in Pseudoscalar Meson in Pseudoveclor Coupling..Katuro Sawada 455

Letters to the Editor:

On the Proton-Neutron Interaction ....T. Komoda & M. Sasaki 468
On the Pion-Nucleon Scattering ....Y. Miyachi 469
The Statistical Mechanics of Time-Dependent Phenomena ....H. Mori 470

Vol. 9, No. 5 May 1953

The Quantum-Statistical Theory of Transport Phenomena. II —*On the Theory of Metallic Conductivity*— ....Hazime Mori 473

Meson-Deuteron Reaction & Nucleon Isobars........................ .... Sadahiko Matsuyama & Hironari Miyazawa 492

The General Theory of the Interaction Representation. II —*General Fields and Interactions*— ..Hiroomi Umezawa & Yasushi Takahashi 501

The Theory of V-Particles ....Ken-ichi Ono 524

On the Structure of the Interaction of the Elementary Particles. IV —*On the Interaction of the Second Kind*— ....Susumu Kamefuchi & Hiroomi Umezawa 529

The Field Theory of Superconductivity....................Abdus Salam 550

Letters to the Editor:

Remarks on Lévy's Fourth Order Potential...............T. Hamada & M. Sugawara 555

A Non-Local Wave Equation and Its Connection with the Dirac Particle ....T. Takabayasi 557

The Theory of the Structure of Elementary Particles ....O. Hara & T. Marumori 559

The Theory of the Interactions with Higher Derivatives...............Y. Katayama 561

Vol. 9, No. 6 June 1953

On the Interaction of Additive Electrons with the Polarization in the Ionic Crystals. I ....Yutaka Toyozawa, Teturo Inui & Yasutada Uemura 563

On the Inelastic Collision between Molecules. III *Rotational Transitions in He_2-Gas*— ....Kazuo Takayanagi & Tadashi Kishimoto 578

On the Convergence of the Perturbation Method in the Quantum Field Theory...Ryoyu Utiyama 593

Scattering Problem in the Intermediate-Coupling Theory. I ....Ziro Maki, Masatomo Sato & Sin-itiro Tomonaga 607

On the Quantum Theory of Fields....................Dominique Rivier 633

On the Origin of the Anisotropy Energy of $CuCl_2 \cdot 2H_2O$................ ....Tôru Moriya & Kei Yosida 663

Letters to the Editor:

On the Evaluation of the Operator Function log $(e^y e^z)$ .... I. Fujiwara 676
On the Electronic Polaron State .... Y. Toyozawa 677
A Note on the Elastic Frequency Distribution Function of Crystal........ S. Huzinaga 678
Numerical Work on the Fluctuation Problem of Electron Cascades..................
.... A. Ramakrishnan & P. M. Mathews 679
On the Separability of Dirac Equation .... T. Takabayasi 681
On the D State Probability of Deuteron.................................. S. Machida 683
On the Families of Spinor Fields .... S. Oneda & H. Umezawa 685

Contents and Author Index to Volume 9............................ i-vi

Vol. 10, No. 1 July 1953

Deuteron Stripping Reaction .... Shiro Yoshida 1
Statistical Mechanics of General Brownian Motions underlying Irreversible Processes................................ Tsunenobu Yamamoto 11
Ionization of Gas by Electrons .... Julian K. Knipp, Tetsuo Eguchi, Masao Ohta & Shozo Nagata 24
Theory of the Interactions with Higher Derivatives and Its Application to the Non-Local Interaction .... Yasuhisa Katayama 31
On the Interaction of Additive Electrons with the Polarization in Ionic Crystals. II ...... Yutaka Toyozawa, Teturo Inui & Yasutada Uemura 57
A Tentative Interpretation of Bickford's Observation of the Resonance Absorption in Magnetite below Its Transition Point. . Takeo Nagamiya 72
Theory of the Normal Modes of Vibration in Crystal.... Sadaaki Yanagawa 83
Statistical Theory of Hindered Rotation in Molecular Crystals. II —*Quantum Effects*— .... Tuto Nakamura 95

Letters to the Editor:

Perturbation Theory of Relativistic Eigenvalue Problem .... N. Mugibayashi & M. Namiki 108
New Description of Field —*Classical Field*— .... Y. Takano & I. Suzuki 110
Some Comments on the Theory of V-Particle.............................. K. Ono 111
On the β-γ Angular Correlation of Sb^{124} .... M. Morita & M. Yamada 111
Theory of Rearrangement Collisions........ Y. Fujimoto, S. Hayakawa & K. Nishijima 113
On the Conservation of Heavy Particles....................................... .... O. Hara, T. Marumori, Y. Ohnuki & H. Shimodaira 114

The Statistical Quantum Mechanics of Time-Dependent Phenomena and Viscosity.... .... T. Sasakawa 116

Interaction between Spin Waves and Conduction Electrons ....A. Kondoh 117

'Quantum Condition' in the Phase-Space Representation of Quantum Mechanics...... ....T. Takabayasi 119

Equivalence between the Formulation of Quantum Mechanics in terms of Quantum Potential and the One in terms of Markoff-like Process ....T. Takabayasi 121

Subsidiary Conditions in the Phase-Space Representation of Quantum Mechanics ——*Supplements to Previous Notes*——..........T. Takabayasi 122

Errata:

The *j-j* Coupling Shell Model (Vol. 8, p. 509) ....M. Umezawa 124

Contents of Journ. Phys. Soc. of Japan, Vol. 8 No. 4 i

Vol. 10, No. 2 August 1953

On the Constants of Motion for the Case of Non-Localized Interactions ... .Yôrô Ôno 125

On the Equivalence of the Particle Formalism and the Wave Formalism of Meson. II ——*Case of Interacting Meson and Nucleon Fields*——.. ....Zensuke Tokuoka 137

Antiferromagnetism. The Kagomé Ising Net ....Kenji Kanô & Shigeo Naya 158

Miscellanea in Elementary Quantum Mechanics. III ....Kodi Husimi & Masuhiko Otuka 173

On Gauge Invariance in Electrodynamics and the Self-Energy Problem of the Photon ....Osamu Hara & Hisaichiro Okonogi 191

On the Effects of Excited States of Nucleons upon Static Nuclear Potential in Symmetrical Pseudoscalar Meson Theory. I ——*Derivation of Nuclear Potential and Qualitative Conclusions*—— ....Tokuji Matsumoto, Tetsuo Hamada & Masao Sugawara 199

A Speculation on V-Spin ....D. C. Peaslee 227

Letters to the Editor:

On the Solution of the Equation of Motion..........H. Kita 231

On the Theory of β-Decay ....Y. Tanikawa & K. Saeki 232

On the Spin-Lattice Relaxation at Extremely Low Temperatures..........K. Sugihara 234

Nonlinear Pseudoscalar Meson Theory ....F. Cap 235
Angular Distribution of the Deuteron Photodisintegration at Moderate Energies........
....A. Sugie & S. Yoshida 236
Cloud Chamber Study of Nuclear Interactions in Lead and Carbon of Secondaries emitted in Cosmic Ray penetrating Showers ....I. Kita & O. Minakawa 237
The Absolute Intensity of Cosmic Rays at Geomagnetic Latitude 25°N...............
....Y. Kitamura & O. Minakawa 239
The π-Nucleon Scattering and the Damping Effect..........K. Hasegawa & S. Azuma 240
Note on the Finite Nuclear Size Effect in Beta-Decay ....M. Yamada 241

Vol. 10, No. 3 September 1953

Correction to the Beta-Decay Nuclear Matrix Elements....Masami Yamada 245
Theoretical Reinvestigation of the Beta-Spectrum of RaE..Masami Yamada 252
On the Nuclear Saturation..............Shuzo Ogawa & Toshio Marumori 265
On the Interaction of Electrons with Lattice Vibrations...Hideo Kanazawa 275
On the Elastic Frequency Distribution Function of Simple Crystals.......
.............................Sigeru Huzinaga & Tasuke Hasino 279
Spin-Spin and Spin-Other-Orbit Interactions.................Hisashi Horie 296
Effect of Nucleon Excited State on Magnetic Moment Anomaly..........
.... Tetsuo Hamada 309
Nuclear Forces in Pseudoscalar Meson Theory.................Iwao Sato 323

Letters to the Editor:

New Proposal on the Mass Spectrum of Elementary Particles.......................
....S. Yoshikawa & T. Hasebe 359
On the Interaction Forms of the Beta-Decay..........................Y. Tanikawa 361
On the Electronic Structure of LiH Atomic Orbital Approach with Configurational Interaction...K. Tomita & K. Fukui 362
Interference Terms of Beta-Ray Angular Correlations ....M. Morita 363
Note on Coexistence of Tensor and Axialvector Interactions in Beta-Decay..M. Morita 364
On the Gauge Invariancy and the Structure of Elementary Particle......Y. Takahashi 366
On the State of Solid Hydrogen.............................K. Tomita & I. Mannari 367

Errata:

On the Inelastic Collision between Molecules. II (Vol. 8, p. 497)........K. Takayanagi 369
On the Inelastic Collision between Molecules. III (Vol. 9, p. 578)...................
....K. Takayanagi & T. Kishimoto 369
Deuteron Stripping Reaction (Vol. 10, p. 1)...............................S. Yoshida 370
Theory of the Normal Modes of Vibration in Crystal (Vol. 10, p. 83)....S. Yanagawa 370

Vol. 10, No. 4 October 1953

On the Heisenberg Treamtent of the Field Variables .....Ichie Watanabe 371

A Remark on the Strong Coupling Approximation in Meson-Nucleon Scattering...............................Ziro Maki & Masatomo Sato 386

Pion-Nucleon Scattering and Nucleon Isobar ....Akira Kanazawa & Masao Sugawara 399

Recoil Effects in the Strong Coupling Theory. I........Toshiyuki Toyoda 415

On the Many-Body Problem in the Intermediate Coupling Theory. I.......Takao Tati 421

A Generalization of Special Lorentz Transformation in de Sitter Space-Time.....................................Hyôitirô Takeno 431

On the Wave Theory of Light in General Relativity. I ——*Path of Light*——...........................Yoshio Ueno 442

On the Spin of the μ-Meson ....Kenzo Iwata 451

On the Baryon-Meson-Photon System.......................A. Pais 457

Letters to the Editor:

On the Universal Fermi Interaction.............................O. Hara, T. Marumori, Y. Ohnuki & H. Shimodaira 470

On the Radiative Interaction of Phonon Field with Electrons...........H. Kanazawa 471

Note on the Light Absorption in the Insulating Crystals......................T. Ohta 472

On the Atom-Exciton Interaction ....T. Ohta 474

On the Radiation Damping and the Decay of an Excited State.............M. Namiki & N. Mugibayashi 474

A Test of Charge Independence by the Nuclear Reactions.............Y. Fujimoto & Y. Yamaguchi 476

Effect of Electromagnetic Radiation on Lamb Shift ....I. Singh 476

Note on the Meson Theory of Nuclear Force...............S. Fujii, J. Iwadare, S. Otsuki, M. Taketani, S. Tani & W. Watari 478

Effect of Collective Motion on Beta Decay ....S. Suekane 480

Vol. 10, No. 5 November 1953

On a Five Dimensional Representation of the Electromagnetic and Electron Field Equations in a Curved Space-Time................Mineo Ikeda 483

On the Fundamental Equation for the Nucleon ....Takao Okabayashi 499

Note on a *j-j* Coupling Shell Model .... Minoru Umezawa 505
Static Spherically Symmetric Space-Times in General Relativity .... Hyôitirô Takeno 509
Upper Bound of the Pseudoscalar Coupling Constant in Beta-Decay .... Jun-ichi Fujita & Masami Yamada 518
Cerenkov Radiation and Supersonic Flows .... Tosiya Taniuti 525
Hamiltonian Formalism in Non-Local Field Theories .... Chushiro Hayashi 533
Many-Body Problem in Quantum Field Theory. I .... Kazuhiko Nishijima 549

Letters to the Editor:

On the Inverse Power Expansion of the $S_{vac}[\eta^*, \eta, J]$ and the Green-Functions .... S. Hori 575
The Second Virial Coefficient at Very Low Temperatures .... K. Hiroike 575
The Photon Self-Energy Problem and Microscopic Space-Time Structure .... T. Kimura 577
Analytical Representation of General Spin .... T. Yamamato 579
On the Magnetic Structure of Manganese Antimonide .... K. Komatu 579
Charge Independence for *V*-Particles .... T. Nakano & K. Nishijima 581
The Distribution Function of Degenerating Ensemble
——*An Addition to "Generalization of Statistics"*—— .... T. Okayama 583
An Interpretation of Asymmetric Fission .... T. Sasakawa & T. Sawada 585

Contents of Journ. Phys. Soc. of Japan, Vol. 8, No. 5 588

Vol. 10, No. 6 December 1953

On the Duffin-Kemmer Algebra .... Izuru Fujiwara 589
On the Transition Matrix and the Green Function in the Quantum Field Theory .... Sho Tanaka & Hiroomi Umezawa 617
β-Spectra of Fe^{59}, Rb^{87}, Tc^{99}, Cs^{137} and the Coupling Constants of Scalar and Tensor Interactions in β-Decay .... Masato Morita, Jun-ichi Fujita & Masami Yamada 630
On the β γ Angular Correlation of Sb^{124}. II .... Masato Morita & Masami Yamada 641
Convergence of Iterative Methods .... Takashi Kikuta 653
Pseudoscalar Interaction in the Theory of Beta-Decay and RaE .... Hisao Takebe 673

Letters to the Editor:

Note on the Neutral Vector Meson Theory ............................R.J. Glauber 690
On the Lower Energy Levels of Li^6..............................T. Isidu & S. Obi 690
Non-Perturbation Approach Method by Edwards..........................S. Okubo 692
Fourth Order Calculations of Meson-Proton Scattering in the Symmetrical Ps(Ps) Theory ....K. Nakabayasi, K. Hasegawa & I. Yamamura 694
Fourth Order Phase Shifts for Meson-Proton Scattering in the Symmetrical Ps(Ps) Theory .... K. Nakabayasi, K. Hasegawa & I. Yamamura 696
On the Relation between Non-Local Urmaterie Field and Irreducible Local Field ....Y. Ohnuki & O. Hara 697
Some Remarks on the Mass Spectrum and Non-Local Interaction.............H. Goto 698

Errata:

New Formulation of One-Body Problem in Quantum Electrodynamics (Vol. 9, p. 223).. ....M. Namiki & Y. Suzuki 700
Molecular Structure and Absorption Spectra of Carotenoids (Vol. 8, p. 639) .... G. Araki & T. Murai 700

Contents and Author Index to Volume 10 .... i-vii

Vol. 11, No. 1 January 1954

Invariant Delta Functions in the sense of Distributions ....Takehito Takahashi 1
The Meson Theory of Nuclear Forces. II *High Energy Nucleon-Nucleon Scattering*—— ....Saburo Fujii, Junji Iwadare, Shoichiro Otsuki, Mituo Taketani, Sumio Tani & Wataro Watari 11
Interaction between Electrons in One-Dimensional Free-Electron Model with Application to Absorption Spectra of Cyanine Dyes................ ....Gentaro Araki & Huzihiro Araki 20
On the Bose-Einstein Liquid Model for Liquid Helium. I ——*He^3-He^4 Mixtures*——..........................Ziro Mikura 25
On the Spontaneous Magnetizations of Honeycomb and Kagomé Ising Lattices ....Shigeo Naya 53
Nucleon Scattering by a Potential..Masahiko Matsumoto & Wataro Watari 63
Note on the Second Kind Interaction....................Susumu Okubo 80
Studies on the Stochastic Problem of Electron-Photon Cascades ....Alladi Ramakrishnan & P. M. Mathews 95

Letters to the Editor:

Nucleon Isobars and Nuclear Forces in Low Energy Region ....T. Kikuta 118

Fermi's Theory of the Generation of Pions and the Partition Theory of Numbers ....F. C. Auluck & D. S. Kothari 120

The Formal Theory of Error Estimation of Rearrangement Collisions....T. Sasakawa 121

Note on Meson-Nucleon Interaction....................................S. Minami 123

Vol. 11, No. 2 February 1954

Mass Spectrum of Elementary Particles. I ——*Eigenvalue Problem in Space-Time*—— ....Hiroshi Enatsu 125

Generalized Racah Coefficient and Its Applications ....Akito Arima, Hisashi Horie & Yukito Tanabe 143

On the Green-Functions of Many-Electron Problem..........Shinzô Nakai 155

Bound States and S-Matrix in Quantum Field Theory.......Shinzô Nakai 179

Analysis of the Structure of Transformation Function in Quantum Mechanics ....Smio Tani 190

On the Bose-Einstein Liquid Model for Liquid Helium. II ——*Properties under High Pressures*—— ....Ziro Mikura 207

An Invariance Theorem for Cross Sections of Meson-Nucleon Scattering.. ....Shigeo Minami 213

β-γ Angular Correlation of Tm^{170} ....Jun-ichi Fujita, Masato Morita & Masami Yamada 219

Letters to the Editor:

On the Renormalization of Salpeter-Bethe Kernel of Meson-Nucleon System in the State $T=1/2$ ....T. Yosimura 224

On Field Equations with Non-Local Interaction..........................C. Hayashi 226

On a Covaraint Generalization of Tamm-Dancoff Approximation for Pion-Nucleon Scattering ....K. Itabashi 227

Renormalization in Generalized Tamm-Dancoff Approximation for Pion-Nucleon Scattering ....K. Itabashi 228

Errata:

Fourth Order Phase Shifts for Meson-Proton Scattering in the Symmetrical Ps(Ps) Theory (Vol. 10. p. 696)...........K. Nakabayasi. K. Hasegawa & I. Yamamura 230

Note on Meson-Nucleon Interaction (Vol. 11, p. 123) ....S. Minami 230

Contents of Journ. Phys. Soc. of Japan, Vol. 8, No. 6; Vol. 9, Nos. 1 & 2 .... i-iv

Vol. 11, No. 3 March 1954

Anomalous Magnetic Moment of Nucleon and Nucleon Isobar .... Akira Kanazawa & Masao Sugawara 231

On the Bose-Einstein Liquid Model for Liquid Helium. III ——*Further Considerations regarding Vapour Pressures of He^3-He^4 Mixtures*—— ....Ziro Mikura 244

On Gauge Invariance and the Structure of Elementary Particles.......... ....Yasushi Takahashi 251

Reduced Widths from (d, p) Reactions.............................. ....Yoichi Fujimoto, Ken Kikuchi & Shiro Yoshida 264

On the Structure of the Interaction of Elementary Particles. V —— *Interaction of the Second Kind and Non-Local Interaction*——......... .... Susumu Kamefuchi 273

On an Expression for the Total Cross Section ....L. I. Schiff 288

On the Construction of S-Matrix in Lagrangian Formalism............. ....Tsutomu Imamura, Shigenobu Sunakawa & Ryoyu Utiyama 291

Theory of Antiferromagnetic Resonance in $CuCl_2 \cdot 2H_2O$...Takeo Nagamiya 309

Letters to the Editor:

A Note on the Generalized Statistics ....F. Ferrari & C. Villi 328

On the Weak Universal Boson-Fermion Interaction..S. Ogawa, H. Okonogi & S. Oneda 330

Kinematical Studies of Pion-Nuclen Interactions.................................... .... S. Hayakawa, M. Kawaguchi & S. Minami 332

The Effect of the Mass Difference between Charged and Neutral Pions on the Nuclear Force..A. Sugie 333

On the Neutron He^4 Scattering...T. Tamura 335

On the Theory of Condensing Systems ....K. Ikeda 336

Vol. 11, Nos. 4 & 5 April-May 1954

The Formulation of Quantum Mechanics in terms of Ensemble in Phase Space ....Takehiko Takabayasi 341

A Method in Quantum Statistical Mechanics. I — *General Theory*—— .. .. Hiroshi Ichimura 374

A Method in Quantum Statistical Mechanics. II —*The Degenerate Fermi-Dirac Assembly*— .... Hiroshi Ichimura 385
The Problem of Many-Bodies and the Superposition of Spherically Symmetric Space-Times in General Relativity .... Hyôitirô Takeno 392
A Tentative Theory of Λ-Particles —*Theory of 4-Dimensional τ-Space*— .... Tadao Nakano & Ryoyu Utiyama 411
On the Magnetic Anisotropy Energy of FeF_2 .... Kazuo Niira & Takehiko Oguchi 425
Conservation Laws in Classical and Quantum Physics ... Eugene P. Wigner 437
On the Group of Transformations in Six-Dimensional Space. II —*Conformal Group in Physics*— .... Yasuhisa Murai 441
Note on the Slow Electrons in a Polar Crystal .... Eijiro Haga 449
The Generalization of Stueckelberg Formalism in the Theory of Quantized Field .... Minoru Hamaguchi 461
On the Theory of Cooperative Phenomena .... Shigetoshi Katsura 476

Letters to the Editor:

A Variation Principle in Deuteron Problem .... T. Kikuta 493
Renormalization in the Covariant Treatment of Pion-Nucleon Scattering ...... S. Chiba 494
Further Comments on the Proposed Mass Spectrum .... S. Yoshikawa & T. Hasebe 496
On the κ-μ Decay-in-Flight in the Photographic Emulsion exposed at High Altitude .... K. Niu 499
Covariant Subtraction of "Overlapping Divergences" appearing in the Pion-Nucleon Scattering .... D. Ito & H. Tanaka 501
Futher Considerations regarding Liquid Helium II at High Pressures ...... Z. Mikura 503
On the Thermal Rayleigh Disk in Liquid Helium containing He^3 .... Z. Mikura 504
Composite States of Two Fermions through Fermi-Type Interaction .... H. Katsumori 505
Configuration Mixing and Magnetic Moments of Nuclei .... A. Arima & H. Horie 509

Vol. 11, No. 6 June 1954

Interpretation of the Excitation of Gamma-Rays by 10 MeV Neutrons .... Satio Hayakawa & Ken Kikuchi 513
A Method in Quantum Statistical Mechanics. III —*Virial Expansion for the Quantum Gas*— .... Hiroshi Ichimura 519
Statistical Mechanics of Surface Tension of Curved Interface. I .... Tomio Segawa & Ei Teramoto 528

A Formulation of Field Theory in Hilbert Space ....Giiti Iwata 537
The Theory of Collisions between Two Diatomic Molecules ....Kazuo Takayanagi 557
Two Simple Stochastic Models of Cascade Multiplication ....Alladi Ramakrishnan & S. K. Srinivasan 595

Letters to the Editor:

Chain Configurations and Rubber Elasticity..........................E. Teramoto 604
On Fermi's Theory of High Energy Nucleon-Nucleon Collisions ....V. S. Nanda 605
A Remark on the Infinities due to the New Complex Poles of Modified Propagators .. .. R. Utiyama & T. Imamura 606
Note on the Contribution of the Single Scattering to the Lateral Structure of Cascade Showers ....J. Nishimura & K. Kamata 608
Some Generalization of the Theory of Scattering with Application to Slow Electrons in Polar Crystals ....A. Morita 609
Pion-Nucleon Scattering by Tamm-Dancoff Method..........K. Ishida & A. Takahashi 611
The General Theory of Relativity and the Expanding Universe........S. Bhattacharya 613
Contents and Author Index to Volume 11.......................... i-vi

Vol. 12, No. 1 July 1954

On the Spin Wave Field Theory and Its Application to the Microwave Resonance.......................................Noboru Tsuya 1
Super-Stationary Variational Method ....Takashi Kikuta 10
On Static Solutions of Einstein's Generalized Theory of Gravitation. I.... ....Mineo Ikeda 17
The Classical Equations of a Point Particle in a Symmetric Meson Field.. ....R. C. Majumdar, S. Gupta & S. K. Trehan 31
On a Treatment of Many-Particle Systems in Quantum Field Theory .... Hiroshi Suura 49
Some Remarks on the Charge Conjugation ....Sho Tanaka 72
Theoretical Analysis of Pion-Nucleon Scattering .... Nobuyuki Fukuda, Shigeo Goto, Susumu Okubo & Katuro Sawada 79
On the Effective Hamiltonian for Pseudoscalar Meson with Pseudoscalar Coupling with Nucleon............Tomoya Akiba & Katuro Sawada 94

Letters to the Editor:

High Energy Nucleon Scattering by Nuclei .... O. Kawaguchi, M. Kawai, Y. Nishida, M. Sano & H. Ui 99

Electromagnetic Properties of Deuteron..........................I. Sato & K. Itabashi 100
Diagonalisation of Hamiltonian..S. Okubo 102
Reformulation of Brueckner-Watson Method by means of Canonical Transformations.. ....S. Tani 104
On the Variational Solution of Bethe-Salpeter Equation in Pion-Nucleon Scattering.... ....D. Ito & H. Tanaka 105
Some Remarks on the Even-Odd Rule....................................K. Nishijima 107
Damping Effect in the Gamma-Decay of a Neutral Pion....J. Iwadare & K. Nishijima 108
A Remark on Neutron-Proton Mass Difference................Y. Oishi & H. Katsumori 109
A Note on Photon-Nucleon Scattering...................................Y. Yamaguchi 111

Vol. 12, No. 2 August 1954

The Quantum Statistical Theory of Transport Phenomena. III ——*Coarse-Grained Phase-Space Distribution Functions*——..Syu Ono 113
On Equivalent Observers. II..........................Hyôitirô Takeno 129
Reduced Widths on Collective Model......................Shiro Yoshida 141
On the Construction of Potential in Field Theory..................... ....Nobuyuki Fukuda, Katuro Sawada & Mituo Taketani 156
The Effects of Heavy Particles on π-Meson-Proton Scattering ....Shigeaki Hatano, Tadashi Kaneno & Mitsuo Shindo 167
An Attempt to the Unified Description of Elementary Particles......... ..Osamu Hara, Toshio Marumori, Yoshio Ohnuki & Hajime Shimodaira 177
Wave Equations with New Degree of Freedom.............Ken-iti Gotô 208
Upper and Lower Bounds of Born Approximation. I ......Takashi Kikuta 225
Upper and Lower Bounds of Born Approximation. II .....Takashi Kikuta 234

Letters to the Editor:

Effect of the Pauli Moment on the γ-Decay of Neutral Meson ....H. Katsumori 241
Meson Production in Meson-Nuclear Collisions ....Y. Miyachi 243
Electronic Structure of Graphite and Boron Nitride ....K. Ariyama & S. Mase 244
An Interpretation for the Electronic Conductivity and Diamagnetic Susceptibility of Graphite ....K. Ariyama & S. Mase 246
On the Excited States of Even-Even Nuclei...............M. Nagasaki & T. Tamura 248
Radiative Corrections to the Anomalous Magnetic Moment of Nucleon in Pseudoscalar Meson Theory (*Errata for* Vol. 6, p. 252) ....K. Nakabayasi & I. Sato 250

Vol. 12, No. 3 September 1954

A Formulation of the Theory of Alpha-Particle Decay from Time-Independent Equations .... R. G. Thomas 253

A Hydrodynamical Description of Many Bose Particle Systems .... Toshiyuki Nishiyama 265

Many-Body Problem in Quantum Field Theory. II ..... Kazuhiko Nishijima 279

Wave Fields in de Sitter Space .... Ken-iti Gotô 311

Kinematical Investigations of Meson-Nucleon Reactions .... Satio Hayakawa, Masaaki Kawaguchi & Shigeo Minami 355

Mass Spectrum of Elementary Particles. II .... Hiroshi Enatsu 363

Vapour Pressures of He^3-He^4 Mixtures .... S. M. Bhagat & P. K. Katti 380

On the Time Reversal in the Quantized Field Theory .... Hiroomi Umezawa, Susumu Kamefuchi & Sho Tanaka 383

Letters to the Editor:

On the Direct Interaction in Nuclear Reactions......... S. Hayakawa & T. Sasakawa 401

Potential in Quantum Field Theory .... T. Imamura 402

An Empirical "Charge Dependence" Relation to the Rest-Masses of Elementary Particles .... S. Yoshikawa & T. Hasebe 403

Excitation of Metal Electrons by an Energetic Primary Particle .... T. Shindo 406

Vol. 12, No. 4 October 1954

Relativistic Wave Equations under the Inhomogeneous Lorentz Group .... Ken-iti Gotô 409

Theory of the Electronic Polaron and Ionization of a Trapped Electron by an Exciton .... Yutaka Toyozawa 421

On the Conductivity of Non-Polar Crystals in the Strong Electric Field. I .... Jiro Yamashita & Mitsukuni Watanabe 443

The Theory of the Dielectric Constant of Ionic Crystals. II ——*Effect of Temperature*—— .... Jiro Yamashita 454

On the Wave Theory of Light in General Relativity. II ——*Light as the Electromagnetic Wave*—— .... Yoshio Ueno 461

Renormalization in the Covariant Treatment of Pion-Nucleon Scattering ... . Shin Chiba 481

On the Renormalization in the Tamm-Dancoff Approximation for One-Nucleon Problem. I ——*A Covariant Generalization of the Tamm-Dancoff Method*—— ....Kiyomi Itabashi 494

On Nuclear Force for ${}^3S_1 + {}^3D_1$ State.. Masahiko Matsumoto & Wataro Watari 503

Phenomenological Analysis of the Meson Theory of Nuclear Force .... Shoichiro Otsuki & Saburo Fujii 521

Generalization of Feynman's Theory of Energy Levels of Liquid Helium.. Hirotsugu Matsuda 537

Letters to the Editor:

A Remark on Tamm-Dancoff Approximation ....T. Okabayashi 545

On the Multiple Scattering Phase Shifts and the Nuclear Force ——*Scalar Pair Theory*—— ....K. Hasegawa & S. Azuma 546

On the Analysis of the Anomalous Magnetic Moment of the Nucleon in the Second Order Calculations ....K. Hasegawa, S. Matsuyama & T. Akiba 548

Elastic Scattering of Alpha-Particles by Heavy Nuclei ....K. Izumo 549

On Some Notes on the So-called G. Feldman's Modified Propagator........Y. Miyatake 551

Vol. 12, No. 5 November 1954

On the Effects of Excited States of Nucleons upon Static Nuclear Potential in Symmetrical Pseudoscalar Meson Theory. II ——*Numerical Results on Deuteron Problem*—— .....Tokuji Matsumoto & Masao Sugawara 553

Beta-Ray Spectra. I ....Hisao Takebe 561

Beta-Ray Spectra. II ....Hisao Takebe 574

Gamma Ray Energy Spectrum from Iron bombarded by 14-MeV Neutrons .... Satio Hayakawa & Ken Kikuchi 578

On the Renormalization in Tamm-Dancoff Approximation for One-Nucleon Problem. II ——*Subtraction of Divergences in the Generalized Tamm-Dancoff Equations*—— ....Kiyomi Itabashi 585

Diagonalisation of Hamiltonian and Tamm-Dancoff Equation.. Susumu Okubo 603

Configuration Mixing and Magnetic Moments of Odd Nuclei .... Akito Arima & Hisashi Horie 623

Renormalization of Two-Electron Green-Function .... Sigenobu Sunakawa, Tsutomu Imamura & Ryoyu Utiyama 642
On the Binding Energy and Properties of Lower Energy Levels of Li^6 ... . Masato Morita & Taro Tamura 653

Letters to the Editor:

A Generalization of the Foldy Transformation in Ps-Ps Meson Theory ....P. Y. Pac, S. Tani & K. Yamazaki 689
Notes on the Unstable Particles..................S. Ogawa, B. Sakita & Y. Taguchi 691
Zero-Energy Mesonic Processes and Renormalization in D.T.G.'s Formalism .... S. Chiba & M. Namiki 693
Zero-Energy Mesonic Processes and Renormalization in Schwinger's Formalism .... M. Namiki, S. Chiba & S. Hanawa 694
Velocity-Dependent Potential and Gauge Invariance of the First Kind ....C. H. Chang 696

Errata:

The Classical Equations of a Point Particle in a Symmetiric Meson Field (Vol. 12, p. 31) ....R. C. Majumdar, S. Gupta & S. K. Trehan 697

Contents of Journ. Phys. Soc. of Japan, Vol. 10, No. 1 698

Vol. 12, No. 6 December 1954

The Cut-off Method in Meson Theory ....Shigeo Goto 699
Note on the Angular Distribution of Photo-Reaction ....Masato Morita, Atsushi Sugie & Shiro Yoshida 713
On the Meaning of the Solution to the One-Body Dirac Equation .... Smio Tani & Kazuo Yamazaki 723
Beta-Ray Spectra. III.................................Hisao Takebe 747
Kinematical Investigation of the S-Matrix ....Masaaki Kawaguchi 758
Pion-Nucleon Scattering in the Tamm-Dancoff Approximation ....Shin Chiba, Miwae Yamazaki & Nobuyuki Fukuda 767
On the Relation between Meson-Nucleon Scattering and Photomeson Production......................Masaaki Kawaguchi & Shigeo Minami 789

Letters to the Editor:

The Relaxation Process in Ferromagnetic Resonance Absorption ....T. Kasuya 802
The Relaxation Process in Ferromagnetic Resonance Absorption
——*The Effect of the Conduction Electron*—— ....T. Kasuya 803

The Method of Generating Function applied to Radiative and Non-Radiative Transition of a Trapped Electron in a Crystal......................R. Kubo & Y. Toyozawa 805
Meson Theoretical Potentials in Triplet Odd State ....S. Otsuki & R. Tamagaki 806
A Note on Superexchange Interaction ....J. Yamashita 808
A Remark on Convergence Factor..N. Ito 809
On the Hydrodynamical Representation of Non-Relativistic Spinor Equation .... T. Takabayasi 810
A Classical Treatment of the Scattering of Electromagnetic Waves by Nucleons .... I. Sato & Y. Ichikawa 812

Errata:

Kinematical Investigations of Meson-Nucleon Reactions (Vol. 12, p. 355)..S. Hayakawa. M. Kawaguchi & S. Minami 814

Contents and Author Index to Volume 12............................i-viii

Vol. 13, No. 1 January 1955

On the Plural-Multiple Model of High Energy Meson Showers.. Yoshinosuke Terashima 1
Spin-Orbit Coupling in the Pseudoscalar Meson Theory of Nuclear Forces .... Gentaro Araki 13
On the Universality of the Weak Boson-Fermion Interaction..Kenzo Iwata, Shuzo Ogawa, Hisaichiro Okonogi, Bunji Sakita & Sadao Oneda 19
The Combinational Method and the Two-Dimensional Ising Model.. R. B. Potts & J. C. Ward 38
Intermediate Coupling Meson Theory of Nuclear Forces. I ——*General Formulation*—— ....Hiroichi Hasegawa 47
Derivation of the Value of the Coupling Constant g from the Rest Energy of the Nucleon ....Ferdinand Cap 62
Statistical Models of Ferrimagnetism.........Itiro Syozi & Huzio Nakano 69
The Properties of the Meson Theoretical Potentials in Li^6................................ Shoichiro Otsuki, Taturo Sawada & Shota Suekane 79
Fluctuations in the Number of Photons in an Electron-Photon Cascade.............................Alladi Ramakrishnan & S. K. Srinivasan 93

Letters to the Editor:

Effect of Radiation on the Self-Energy of an Electron ..D. S. Kothari & F. C. Auluck 100
On Fermi's Theory of Multiple Production ....K. Ono & K. Yokoi 101

A Note on the Damping of Pair Formation in Pseudoscalar Meson Theory .... T. Hamada & Y. Shôno 102
Recoil Correction to the Adiabatic Nuclear Potential .... M. Shindo & K. Nishijima 103
On the Equivalence Theorem .... Y. Takahashi 105
On the Structure of Dirac Wave Function .... T. Takabayasi 106
A Tentative Analysis of π-2π Process .... D. Ito & S. Minami 108
Wave Equations in Conformal Space——*Wave Equation for Nucleon*—— .... Y. Murai 109
On the Multiple Scattering of an Electron in Lattice .... N. Fukuda & S. Otake 110
On the Interaction of V-Particles .... S. Iwao 111
On Products of Quantities as Distributions .... K. Gotô 112
Beta-Alpha Angular Correlation of Li^8 .... M. Morita & M. Yamada 114
On the Penetrating Showers produced in Paraffin and Graphite .... I. Miura, T. Matano, Y. Toyoda & T. Murayama 115
Matrix Elements of β-Decay for a Spheroidal Core Model .... M. Nomoto 117
On the Thermal Conductivity of Ferromagnetics .... H. Sato 119
Some Comments on the Specific Heat of Liquid He^3 .... Z. Mikura 120
On the Specific Heat of a Solution of He^3 in Liquid He^4 .... Z. Mikura 122
On Double Pion Production in Nucleon-Nucleon Collision .... D. Ito 123
On the Electron-Neutron Interaction .... M. Yamada 124

Errata:

Configuration Mixing and Magnetic Moments of Odd Nuclei (Vol. 12, p. 623) .... A. Arima & H. Horie 127
Beta-Ray Spectra I, II (Vol. 12, p. 561, p. 574) .... H. Takebe 127

Vol. 13, No. 2 February 1955

On the Para- and Antiferromagnetic States of Cobalt Fluoride .... Tuto Nakamura & Hiroshi Taketa 129
A Theory of Antiferromagnetism. II .... Takehiko Oguchi 148
Application of the Method of Generating Function to Radiative and Non-Radiative Transitions of a Trapped Electron in a Crystal .... Ryogo Kubo & Yutaka Toyozawa 160
Potential in Quantum Field Theory .... Tsutomu Imamura 183
Nonadiabatic Treatment of Nuclear Forces. I ——*Static Limit*—— .... Junji Iwadare 189
The D-Wave Contribution to Pion-Nucleon Scattering .... Taiji Yamanouchi & Nobuyuki Fukuda 200
The Energy Balance of Cosmic Rays .... Hiroo Komori 205

Letters to the Editor:

An Example of Five-Dimensional Field ....T. Yamamoto 217
Nonstatic Corrections to the Fourth Order Nuclear Forces..................J. Iwadare 218
Ward's Identity in Neutral Scalar Meson-Nucleon System ......K. Hiida & S. Machida 219
On the Consistency of the Quantum Field Theory based on the Renormalization Hypothesis ....T. Yoshimura 220
Relativistic Hydrodynamics equivalent to the Dirac equation ....T. Takabayasi 222

Errata:

β-Spectra of Fe^{59}, Re^{87}, Tc^{99}, Cs^{137} and the Coupling Constants of Scalar and Tensor Interactions in β-Decay (Vol. 10, p. 630) ......M. Morita, J. Fujita & M. Yamada 224
On the Binding Energy and Properties of Lower Energy Levels of Li^6 (Vol. 12, p. 653) ....M. Morita & T. Tamura 225
Note on the Angular Distribution of Photo-Reaction (Vol. 12, p. 713)...M. Morita, A. Sugie & S. Yoshida 225
Beta-Alpha Angular Correlation of Li^8 (Vol. 13, p. 114)......M. Morita & M. Yamada 225

Contents of Journ. Phys. Soc. of Japan, Vol. 10, No. 3 226

Vol. 13, No. 3 March 1955

On the Theory of Plasma Oscillations in Metals ....Hideo Kanazawa 227
Collisions between Non-Spherical Molecules. I ——*Molecular Collisions in Hydrogen Gas at Lower Temperatures*—— ....Kazuo Takayanagi & Kimio Ohno 243
Nuclear Matrix Element for β-Decay and the Ratio of Coupling Constants .... Jun-ichi Fujita 260
On Static Solutions of Einstein's Generalized Theory of Gravitation. II.. Mineo Ikeda 265
On the β-γ Angular Correlations of Tm^{170} and Sb^{124} ——*VT Interaction*—— .... Yusuke Kato & Masato Morita 276
Charge Independence Theory of *V*-Particles...........Kazuhiko Nishijima 285
Many-Body Problem in Quantum Field Theory. III....Kazuhiko Nishijima 305

Letters to the Editor:

Formula for Differential Cross Section in Nucleon-Nucleon Scattering ..M. Matsumoto 329
On the Jauch Field ....S. Kamefuchi & S. Tanaka 334
A Remark on the Interaction of the Second Kind ....T. Yoshimura 336
Note on the Bound State Problem.......................................T. Okabayashi 338

Errata:

Velocity-Dependent Potential and Gauge Invarince of the First Kind (Vol. 12, p. 696) .... C. H. Chang 340

Contents of Journ. Phys. Soc. of Japan, Vol. 10, Nos. 5 & 6 .... i-ii

Vol. 13, No. 4 April 1955

Electromagnetic Properties of Deuteron ..... Iwao Sato & Kiyomi Itabashi 341

Multiple Scattering Phase Shifts and Nuclear Potential .... Kazu Hasegawa & Shûkô Azuma 360

On the Competition between Decay and Capture of the Unstable Particles due to the Weak Interactions .... Shuzo Ogawa 367

Point Transformation and Its Application .... Shinzô Nakai 380

On Higher Order Corrections in the Meson Theory of Nuclear Forces .... Shigeru Machida & Kei Senba 389

General Formula of the Racah Coefficient .... Masachiyo Sato 405

Nuclear Reactions at Moderate Energies and Fermi Gas Model .... Satio Hayakawa, Mitsuji Kawai & Ken Kikuchi 415

On the Foundation of the Unified Nuclear Model. I .... Toshio Marumori, Jiro Yukawa & Ryokichi Tanaka 442

Letters to the Editor:

Some Remarks on Lee's Model in Renormalizable Field Theory .... Y. Munakata 455

Recoil Effect and Spin-Orbit Coupling .... S. Sato 457

The Relation between Jordan's Non-Localized Theory and Pais-Uhlenbeck's Theory .... Y. Miyatake 458

Elastic Production of Neutral Photo-Pions in Helium .... Y. Yamaguchi 459

The Non-Mesonic Photonuclear Reactions initiated by High Energy μ-Mesons .... S. Kaneko, T. Kubozoe, M. Okazaki & M. Takahata 461

A Possible Effect of Cosmic Rays on Celestial Chemical Composition .... S. Hayakawa 464

Vol. 13, No. 5 May 1955

Elementary Theory of Quantum-Mechanical Collective Motion of Particles. I ......Sin-itiro Tomonaga 467

Elementary Theory of Quantum-Mechanical Collective Motion of Particles. II ......Sin-itiro Tomonaga 482

Adiabatic Process and the Stationary State ......Hajime Tanaka 497

On the Theories of Higher Derivative and Non-Local Couplings. I ......Tosiya Taniuti 505

On Bound Λ^0 Particles ......Ken-ichi Ono 522

On Interactions among Ions of a $BaTiO_3$ Crystal and on Its 180° and 90° Type Domain Boundaries ......Wataru Kinase 529

Clebsch-Gordan Coefficients for $j_2 = 5/2$ ......Reiko Saito & Masato Morita 540

Remarks on Quantum Hydrodynamics ......Hirosi Itô 543

Letters to the Editor:

Self-Energy of Slow Polaron and Variational Method ......E. Haga 555

On the Foundation of the Unified Nuclear Model. II ......T. Marumori & E. Yamada 557

The Orbit-Orbit Interaction ......S. Yanagawa 559

Contents of Journ. Phys. Soc. of Japan, Vol. 10, No. 7 560

Vol. 13, No. 6 June 1955

On the Theory of Thermal Conductivity of Monovalent Metals ......Tadao Kasuya 561

Phase Transition of Husimi-Temperley Model of Imperfect Gas ......Shigetoshi Katsura 571

On the Solution of Γ's for a Type of Non-Symmetric Tensor Field $g_{\mu\nu}$ ......N. N. Ghosh 587

On the Intermediate Coupling Theory of Pseudoscalar Meson Field and a Nucleon ......Daisuke Ito, Yoneji Miyamoto & Yukihiko Watanabe 594

On the Analysis for the Proper Field of a Nucleon ......Yukihiko Watanabe 603

Products of Improper Operators and the Renormalization Problem of Quantum Field Theory ......Werner Güttinger 612

Letters to the Editor:
Quantum Hydrodynamics for a Charged Non-Viscous Fluid .... N. Mikoshiba 627
Quantum-Statistical Mechanics of Electron-Phonon System .... T. Matsubara 628
A General Theory of Meissner Effect .... T. Matsubara 631

Contents and Author Index to Volume 13 .... i-viii

Vol. 14, No. 1 July 1955

Inelastic Scattering of Neutrons by Rotational Excitation .... Satio Hayakawa & Shiro Yoshida 1
Nonadiabatic Treatment of Nuclear Forces. II —*Nonstatic Corrections*— .... Junji Iwadare 16
Explicit Formulae of Beta-Gamma Directional Correlation ... Masato Morita 27
Theory of Sound-Waves and Collective Description ... Toshiyuki Nishiyama 37
On the Meson-Theoretical Potentials .... Shoichiro Otsuki & Ryozo Tamagaki 52
Double Meson Production in the Intermediate-Coupling Theory. I .... Akira Komatsuzawa, Yasuo Munakata & Hiroichi Hasegawa 65

Letters to the Editor:
Formal Theory of Nuclear Direct Interaction in Nuclear Scattering .... H. Ui 75
The Magnetic Field in the Vicinity of the Solar System .... W. L. Kraushaar 77
High Latitude Impact Zones for Solar Cosmic Rays .... W. L. Kraushaar 78

Contents of Journ. Phys. Soc. of Japan, Vol. 10, No. 8 80

Vol. 14, No. 2 August 1955

On the Gamma-Transition of Nuclei .... Mitsuo Sano 81
Nuclear Structure as revealed by Elastic Excitation .... Clark Goodman 95
Separation Energies and Nuclear Structures in Light Nuclei ... Takao Tati 107
The Cu$(n; 2n)$ Excitation Function and the Knock-out Process in Nuclear Reactions .... Ryuzo Nakasima & Ken Kikuchi 126
On the Quenching of Molecular Rotation of Ortho-Hydrogen in Solid State .... Tuto Nakamura 135

On the Renormalization of Heisenberg Treatment ....Ichie Watanabe 151

Letters to the Editor:

On the Wave Equation for Spin 1 in Hamiltonian Form ....I. Fujiwara 166
Note on Lehmann's Modified Propagators ....K. Hiida & M. Sawamura 167
Magnetic Exchange Moment to Order eg^4 in Adiabatic Approximation......S. Hatano 170
On the Mass Reversal in the Quantized Field Theory ....
.... T. Ouchi, K. Senba & M. Yonezawa 172

Errata:

On the β-γ Angular Correlations of Tm^{170} and Sb^{124} ——*VT Interaction*—— (Vol. 13, p. 276) ....Y. Kato & M. Morita 174

Vol. 14, No. 3 September 1955

The Formal Theory of Scattering ....Sigenobu Sunakawa 175
Phenomenological Analysis of Elastic π^--p Scattering at 1.4 BeV ....
.... Daisuke Ito & Shigeo Minami 198
Solutions of a Bethe-Salpeter Equation for Scattering States ....
....Kazuhiko Nishijima 203
The Energy-Levels and Transition Probabilities for a Bounded Linear Harmonic Oscillator......................J. S. Baijal & K. K. Singh 214
On the Jauch Field ....Susumu Kamefuchi & Sho Tanaka 225
Connection of the Strong Coupling Theory with the Weak Coupling Theory in the Bound Meson Problem ——*The Symmetrical Scalar Theory*——
.... Smio Tani & Wataro Watari 243

Letters to the Editor:

Some Remarks on the Applicability of the Field Theory from the Standpoint of the Distribution Analysis ....H. Wakita 260
The Character of the Roton State in Liquid Helium......R. P. Feynman & M. Cohen 261
The Cloudy Crystal Ball Model for 14 MeV Neutron Reactions......................
.... M. Kawai, H. Ui & M. Nagasaki 263

Errata:

Potential in Quantum Field Theory (Vol. 13, p. 183) ....T. Imamura 265

Vol. 14, No. 4 October 1955

Relativistic Wave Equations with Maximum Spin Two. I .... Toshihiko Tsuneto, Tetu Hirosige & Izuru Fujiwara 267

The Vector Representation of Spinning Particle in the Quantum Theory. I .... Takehiko Takabayasi 283

On the Recoil Correction to Adiabatic Nuclear Potential.. Iwao Sato, Kiyomi Itabashi & Shinji Satô 303

β-Ray Spectrum of RaE .... Hisao Takebe, Seitaro Nakamura & Mituo Taketani 317

On the Bose-Einstein Liquid Model for Liquid Helium. IV —*A Revised Model*— .... Ziro Mikura 337

A New Approach to Quantum-Statistical Mechanics ..... Takeo Matsubara 351

On the Extension of the Casimir Trick. I —*On the Definition of Density Matrix and Its Reduction*— .... Tsuneyuki Kotani 379

Letters to the Editor:

Note on the Non-Perturbation-Approach to Quantum Field Theory.. T. Goto & T. Imamura 396

A Note on the Static Approximation of the Nucleon Anomalous Magnetic Moment.. A. Kanazawa 397

Stripping Reactions and Nuclear Shell Model .... S. Okai & M. Sano 399

On Quantum-Mechanical Nuclear Dipole Vibrations......................... J. Fujita 400

On the Nuclear Photo-Reaction. I .... S. Fujii & S. Takagi 402

On the Nuclear Photo-Reaction. II .... S. Fujii & S. Takagi 405

An Exactly Soluble Example in Quantum Field Theory.................. S. Machida 407

On the Heisenberg's Non-Linear Meson Equation .... T. Taniuti 408

Vol. 14, No. 5 November 1955

The Statistical Mechanical Aspect of *H*-Theorem. I.................................... Ei Teramoto & Chieko Suzuki 411

Note on the Spin Wave Theory of Antiferromagnetism .... Junjiro Kanamori & Kei Yosida 423

The Self-Energy of the Scalar Nucleon.................... Koichi Mano 435

Extensions of Variational Method. I —*Super-Stationary Variational Method*— .... Takashi Kikuta 457

Recoil Effects in the Strong Coupling Theory. II ....Toshiyuki Toyoda 473
On the Angular Distribution of Double Pion Production in Pion-Nucleon Collisions at 1.4 BeV................ Daisuke Ito & Shigeo Minami 482

Letters to the Editor:

Situation of Rarita-Schwinger Particle as a Model of Nucleon Isobar.................. ....D. Ito & S. Minami 487
Varitaion Principle in Relativisic Hydrodynamics ....Z. Koba 488
On the Binding Energies of Very Light Nuclei ....S. Suekane & W. Watari 490
A Device to avoid Difficult Integrals in Calculations on Molecular Structure .... S. Huzinaga 492
Heat Conductivity and Viscosity of Liquid ^{3}He ....B. K. Agarwal 493
The Anomalous Magnetic Moment of the μ-Meson .... S. Hirokawa, H. Komori & S. Ogawa 494
Deuteron-Deuteron Reaction at High-Energy ....Y. Nishida 495

Vol. 14, No. 6 December 1955

Positive Temperature Effect of Cosmic Rays ....Satio Hayakawa, Kensai Ito & Yoshinosuke Terashima 497
On Quantum Electrodynamics without Subsidiary Conditions...Shoji Ozaki 511
Some Remarks on the Reaction $K^-+d\leftrightarrows\Sigma^-+p$........Kazuhiko Nishijima 523
On the Interaction between Hyperons and Nucleons and the Hyperfragments ....Kazuhiko Nishijima 527
The Relativistic and Exchange Current Corrections to the Deuteron Magnetic Moment and the Thermal N-P Capture Cross Section ....Masao Sugawara 535
Low Energy Limits of Photon-Nucleon and Pion-Nucleon Collisions ....Sigeo Hanawa, Mikio Namiki & Shin Chiba 551
Scattering Matrix in the Heisenberg Representation for a System with Bound States ....Abraham Klein 580
Tables of U Coefficients........... Hiroyuki Matsunobu & Hisao Takebe 589

Letters to the Editor:

Meson-Theoretical Potentials in N^{14} ....S. Otsuki, T. Sawada & S. Suekane 606

On the Relation between Hill-Wheeler's and Bohr-Mattelson's Descriptions of the Nuclear Collective Model .... T. Marumori 608

Errata:

The Properties of the Meson Theoretical Potential in Li^6 (Vol. 13, p. 79) .... S. Otsuki, T. Sawada & S. Suekane 610

Contents and Author Index to Volume 14 .... i-vi

Vol. 15, No. 1 January 1956

On Boundary Conditions in the Non-Symmetric Unified Field Theory .... Mineo Ikeda 1

Meson Reactions in Two-Nucleon System .... Shigeo Minami 12

On the Theories of Higher Derivative and Non-Local Couplings. II .... Tosiya Taniuti 19

He-He Repulsive Potential. I .... Michiko Sakamoto & Eiichi Isiguro 37

Extensions of Variational Methods. II ——*Two Parameter Eigenvalue Problem for the Deuteron State*—— .... Takashi Kikuta 50

On the Exchange Magnetic Moment of the Two Nucleon System .... Shigeaki Hatano & Tadashi Kaneno 63

Letters to the Editor:

The Photodisintegration of Deuteron at High Energy .... D. Ito, M. Ono, T. Kato & Y. Takahashi 74

Relation between the Quadrupole Moments and the Widths of the Giant Resonance of Photonuclear Reaction .... K. Okamoto 75

A Method of Calculation of Electrical Conductivity .... H. Nakano 77

Nature of Nuclear Force indicated by the Photodisintegration of the Deuteron. I .... S. H. Hsieh & M. Nakagawa 79

Mass Reversal and Space-Time Inversions .... S. Watanabe 81

Remarks on Heisenberg's Non-Linear Field Theory .... H. Kita 83

Determination of the Pion Coupling Constant in Nuclear Forces .... J. Iwadare, S. Otsuki, R. Tamagaki & W. Watari 86

Vol. 15, No. 2 February 1956

Populations and Evolution of Stars .... Mituo Taketani, Takeo Hatanaka & Shinya Obi 89
Theory of Electron Multiplication in Silicon .... Jiro Yamashita 95
Supernova Origin of Cosmic Rays .... Satio Hayakawa 111
Pion Theory of Nuclear Forces .... Kazuhiko Inoue, Shigeru Machida, Mituo Taketani & Toshiyuki Toyoda 122
Intermediate Coupling Meson Theory of Nuclear Forces. II .... Yukihisa Nogami & Hiroichi Hasegawa 137
Quantum Statistical Mechanics of Electron-Phonon System .... Hiroshi Ichimura 151
On a Regular Formulation of Quantum Field Theory. I ——*Non Relativestic Theory*—— .... Ken-iti Gotô 167

Letters to the Editor:

On Solutions of He^3 and He^4 .... S. K. Trikha & V. S. Nanda 178
Note on the Decay Interactions of Hyperons and Heavy Mesons .... M. Kawaguchi & K. Nishijima 180
Note on the Decays of $\sum$ Particles .... M. Kawaguchi & K. Nishijima 182
On the Energy Dissipation of Conduction Electrons undergoing Elastic Scattering by Impurities .... T. Yamamoto, K. Tani & K. Okada 184
Interaction of Antinucleons in Matter. I .... J. Iwadare & S. Hatano 185

Errata:

On the Bose-Einstein Liquid Model for Liquid Helium. IV ——*A Revised Model*—— (Vol. 14, p. 337) .... Z. Mikura 187
Nuclear Reactions at Moderate Energies and Fermi Gas Model (Vol. 13, p. 415) .... S. Hayakawa, M. Kawai & K. Kikuchi 188

Vol. 15, No. 3 March 1956

On the One Pion Exchange Potential .... Kichiro Hiida, Junji Iwadare & Shigeru Machida 189
Electromagnetic Radiation from Electron Plasma .... Satio Hayakawa & Noboru Hokkyo 193
Deuteron Stripping Reactions and Nuclear Shell Structure .... Sueji Okai & Mitsuo Sano 203

Effect of Hard Core on the Binding Energies of H^3 and He^3. I .... Takashi Kikuta, Masato Morita & Masami Yamada 222

On the Use of Feynman Amplitudes in the Quantum Field Theory ...... Ziro Maki 237

A Collective Description of the Surface Oscillation of Atomic Nuclei —*Extension of Tomonaga's Method to Three Dimensional Nucleus*— .... Tatuoki Miyazima & Taro Tamura 255

Coulomb Interactions and the Diamagnetism of Free Electrons. I .... Hideo Kanazawa 273

Letters to the Editor:

Interaction of π-Mesons with π-Mesons .... Z. Koba 294

Surface Tension of Liquid He^4 and Liquid He^3 .... S. K. Trikha & O. P. Rustgi 296

On the Renormalization Theory of Quantum Electrodynamics .... S. Kamefuchi & H. Umezawa 298

On the Elementarity of the Weak Boson-Fermion Interaction. I .... S. Oneda, S. Hori & A. Wakasa 300

On the Elementarity of the Weak Boson-Fermion Interaction. II.................... S. Oneda, S. Hori & A. Wakasa 302

On *K*-Meson Decays and the Universal Interactions .. S. Oneda, S. Hori & A. Wakasa 304

Errata:

Theory of Antiferromagnetic Resonace in $CuCl_2 \cdot 2H_2O$ (Vol. 11, p. 309) .. T. Nagamiya 306

Vol. 15, No. 4 April 1956

Absorption Spectra of Unsymmetrical Cyanines .... Gentaro Araki & Sigeru Huzinaga 307

On the Wave Theory of Light in General Relativity. III —*Electromagnetic Four Potential*— .... Hyôitirô Takeno & Yoshio Ueno 322

A Relativistic Field Theory of an Extended Particle. I ..... Tadao Nakano 333

A Statistical Theory of Linear Dissipative Systems. II .... Natsuki Hashitsume 369

Letters to the Editor:

Some Relations between the Bound State Problem and Scattering Theory .. N. Fukuda 414

Note on the Nuclear Level of Spin 2^+ ....M. Sakai 416
On the Renormalization Cut-off ....
........................H. Umezawa, S. Kamefuchi, Y. Tomozawa & M. Konuma 417

Errata:

Note on the Decay Interactions of Hyperons and Heavy Measons (Vol. 15, p. 180) ....
.... M. Kawaguchi & K. Nishijima 419
Contents of Journ. Phys. Soc. of Japan, Vol. 11, No. 5 420

Vol. 15, No. 5 May 1956

The Atmospheric Effects on the Intensity of High Energy μ-Mesons .....
Takashi Murayama, Kazuaki Murakami, Ryokichi Tanaka & Shuzo Ogawa 421
Theory of Mass Reversal in the Quantized Field Theory ....
......................Tadashi Ouchi, Kei Senba & Minoru Yonezawa 431
Proposal for Experiments for Determination of Beta-Decay Interaction and Theory of Triple Cascade Transition..................Masato Morita 445
Remarks on the Pion-Pion Interaction.........................Ziro Koba 461
On the Relativistic Thomas-Fermi Atom ....G. S. Murthy 473
The Statistical Mechanical Aspect of the H-Theorem. II .....Ei Teramoto 480
On the Universality of the Weak Interaction ....Shuzo Ogawa 487
Interaction between Electrons in Two-Dimensional Free-Electron Model for Conjugated Systems.............................Sigeru Huzinaga 495
One-Center Expansion of Molecular Wave Function ......Sigeru Huzinaga 501

Letters to the Editor:

On Feynman's Theory of Polarons ....K. Yamazaki 508
Hydrodynamical Theory of the Multiple Production of Particles in High Energy Nucleon-Nucleus Collision..C. Iso & M. Sato 510

Vol. 15, No. 6 June 1956

Orbits of an Electron in Static Electromagnetic Fields. I ......Giiti Iwata 513
Symmetry in Time and Tanikawa's Method of Superquantization in regard to Negative Energy Fields.........................Satosi Watanabe 523
Deuteron Photodisintegration at High Energies..............Ryozi Suzuki 536

Elastic Scattering of Alpha-Particles by Heavy Elements .... Nobuo Oda & Kichinosuke Harada 545
The Theory of Radiative *K*-Capture. I .... Jiro Yukawa 561
Interpretation on Nitrogen- and Proton-Induced Nuclear Reactions .... Ryuzo Nakasima, Yoshihisa Tanaka & Ken Kikuchi 574

Letters to the Editor:

Surface Rigidity and Shell Structure of Nuclei .... T. Marumori, S. Suekane & A. Yamamoto 582
Nuclear Quadrupole Moment and Rigidity of Nuclear Core .... T. Marumori, S. Suekane & A. Yamamoto 584
Rotational Excitation with Neutron Inelastic Scattering .... M. Yasuno 586
On the Hydrodynamical Description of the Behaviours of Elementary Particles .... M. Hamaguchi 588

Contents and Author Index to Volume 15 .... i-vii
Subject Index (1946 1955) .... 1～63

Vol. 16, No. 1 July 1956

A Classical Theory of the Collective Description .... Yôiti Watanabe 1
Nuclear Magnetic Relaxation in Antiferromagnetics. I .... Tôru Moriya 23
A Theory of Metallic Ferro- and Antiferromagnetism on Zener's Model .. .. Tadao Kasuya 45
Electrical Resistance of Ferromagnetic Metals .... Tadao Kasuya 58

Letters to the Editor:

The Decay Interaction of $K_{\mu 3}$ and K_{e3} and Fermi Interaction .... S. Furuichi, T. Kodama, Y. Sugahara, M. Yonezawa & A. Wakasa 64
Interaction of K^+-Meson and Nucleon .... S. Minami 66
Nature of Nuclear Forces indicated by the Photodisintegration of the Deuteron. II.... .... S. H. Hsieh 68

Vol. 16, No. 2 August 1956

On the Quantum Mechanics-like Description of the Theories of the Brownian Motion and Quantum Statistical Mechanics .... Nobuhiko Saito & Mikio Namiki 71
Nucleon Magnetic Moments in Ps-Ps Intermediate Coupling Meson Theory .... Akira Kanazawa & Masao Sugawara 95
On Quantum-Mechanical Nuclear Dipole Vibrations .... Jun-ichi Fujita 112
Energy Loss of a Charged Particle traversing Superconductors .... Satio Hayakawa & Kazuo Kitao 131
Energy Loss of a Charged Particle traversing Ionized Gas and Injection Energies of Cosmic Rays .... Satio Hayakawa & Kazuo Kitao 139

Letters to the Editor:

An Attenpt of Generalizing the Hypothesis of Charge Independence .... O. Hara & Y. Fujii 149
A Conjecture on the Possible Existence of New Hyperons .... O. Hara & Y. Fujii 150
Inelastic Scattering of Nucleons by Nuclei....R. Kajikawa, T. Sasakawa & W. Watari 152
On the Theory of Thermal Conductivity of Pure Metals at Low Temperatures .... P. G. Klemens 154

Vol. 16, No. 3 September 1956

On the Quantum Field Theory of the Interacion between the Graviton and the Matter Field. I .... Toshiei Kimura 157
Note on the Decay Interactions of Hyperons and Heavy Mesons .... Chikashi Iso & Masaaki Kawaguchi 177
On the Determination of the Spins of Λ^0 and θ^0 Particles ....Shoichi Hori 189
Partial Description of Quantum-Mechanical System .... Gentaro Araki 197
Free-Electron Model of Benzene .... Gentaro Araki 212
The Energy Band Structure of the Metallic Copper —*The Orthogonalized Plane Wave Method*— .... Mitsuru Fukuchi 222
Extensions of Variational Methods. III —*Determination of Potential from Phase Shift Function*— .... Takashi Ohmura 231

Letters to the Editor:

State Vectors in the Collective Description . . . . T. Nishiyama 244
Some Remarks on the Nuclear Level Spacing . . . . Y. Fujimoto, F. Fukuzawa & S. Okai 246
Note on the Decay of Ξ Particles . . . . S. Hatano 248
On the Energy Dependence of the Cross Section for the Production of the Penetrating Shower Underground . . . . S. Higashi, M. Oda, T. Oshio, H. Shibata, K. Watanabe & Y. Watase 250
On the Nuclear Interaction of μ-Meson below Ground . . . . T. Kitamura & M. Oda 252
Thermodynamic Properties of He^3 . . . . V. S. Nanda & S. K. Trikha 254
On the Energy Matrix of the Tensor Forces . . . . T. Sasakawa 256

Contents of Journ. Phys. Soc. of Japan, Vol. 11, No. 7 258

Vol. 16, No. 4 October 1956

The Range of the Interaction between Different Fermions . . . . Michiji Konuma 259
Free-Electron Ring Model of Polyacenes . . . . Gentaro Araki 265
On the Grand Canonical Distribution Method of Statistical Mechanics . . . . Tsunenobu Yamamoto & Hirotsugu Matsuda 269
A Relativistic Wave Equation for a Particle with Two Mass States of Spin 1 and 0 . . . . Haruo Shimazu 287
General Theory of Deuteron induced Reaction. I ——*(d, p) and (d, n) Reactions*—— . . . . Haruo Ui 299
Nuclear Deformability and Shell Structure . . . . Toshio Marumori, Shota Suekane & Atsuko Yamamoto 320
On the Theory of Condensation . . . . Kazuyoshi Ikeda 341
Nuclear Reactions in the Later Stage of the Stellar Evolution . . . . Kimiko Nakagawa, Takashi Ohmura, Hisao Takebe & Shinya Obi 389

Letters to the Editor:

A Lattice Model of Liquid Helium . . . . T. Matsubara & H. Matsuda 416
On the Effects of Heavy Unstable Particles to the Anomalous Magnetic Moments of Nucleons . . . . C. Iso & S. Iwao 417

Vol. 16, No. 5 November 1956

On a Solution of Field Equations in Einstein's Unified Field Theory. I .... N. N. Ghosh 421
Deuteron Stripping and the Compound Nucleus ....Masayuki Nagasaki 429
Theory of Bose-Einstein Condensation of an Imperfect Bose-Einstein Gas.. .... Takeo Matsubara, Akira Morita & Namio Honda 447
Two-Nucleon Problem with Pion Theoretical Potential. I
——*Determination of Coupling Constant and Deuteron Problem*——
.. Junji Iwadare, Shoichiro Otsuki, Ryozo Tamagaki & Wataro Watari 455
Two-Nucleon Problem with Pion Theoretical Potential. II
——*Singlet Even State*——..................................
.. Junji Iwadare, Shoichiro Otsuki, Ryozo Tamagaki & Wataro Watari 472
The Creation of an Electron Pair by a Fast Charged Particle .... Toshiyuki Murota, Akira Ueda & Hajime Tanaka 482
On the Foundation and the Applicability of Williams-Weizsäcker Method.. ....Toshiyuki Murota & Akira Ueda 497
Helium Capturing Reactions in Stars................................
....Satio Hayakawa, Chushiro Hayashi, Mitsuo Imoto & Ken Kikuchi 507

Letters to the Editor:

Charge Independence Hypothesis and Leptons ....T. Ouchi & K. Senba 528
Integral over Path Formulation of Statistical Theory of Irreversible Processes .... D. Falkoff 530
On the Bethe-Salpeter Equation for the Scaler-Spinor Particle System .... R. Sugano & Y. Munakata 532
Constraint in a Quantum System....................................Y. Watanabe 534

Vol. 16, No. 6 December 1956

On an Extended Framework for the Description of Elementary Particles.. .... Mineo Ikeda & Yoshihiko Miyachi 537
Meson-Nucleon Scattering in Low Energy Region .... Daisuke Ito & Shigeo Minami 548
On the Quantum Field Theory of the Interaction between the Graviton and

the Matter Field. II —*Formulation without the Coordinate Condition*— .... Toshiei Kimura 555
A Lattice Model of Liquid Helium. I .... Takeo Matsubara & Hirotsugu Matsuda 569
Some Consequences of the Compound Hypothesis for Elementary Particles .... Ken-iti Matsumoto 583
On the Bose-Einstein Condensation .... Shigetoshi Katsura 589
Two-Nucleon Problem with Pion Theoretial Potential. III —*p-p Scattering at 18.2 MeV*— .. Junji Iwadare, Shoichiro Otsuki, Ryozo Tamagaki & Wataro Watari 604
Formation of Light Nuclei in the Expanding Universe .... Chushiro Hayashi & Minoru Nishida 613
The Composite Model for New Unstable Particles. I .... Sho Tanaka 625
The Composite Model for New Unstable Particles. II .... Sho Tanaka 631
Nuclear Magnetic Relaxation in Antiferromagnetics. II .... Tôru Moriya 641
Two-Nucleon Problem with Pion Theoretical Potential. IV —*Photodisintegration of Deuteron at 20 MeV*— .. Junji Iwadare, Shoichiro Otsuki, Mitsuo Sano, Shuji Takagi & Wataro Watari 658
On a Theory of the Composite Model of Elementary Particles .. Ziro Maki 667

Letters to the Editor:

A New Formulation on the Electromagnetic Field .... T. Ohmura 684
Stability of the Electron .... T. Ohmura 685
On a Composite Model for the New Particles .... S. Sakata 686
Special Theory of Relativity and the Structure of Elementary Particles.... H. Yukawa 688

Contents and Author Index to Volume 16 .... i-vi

Vol. 17, No. 1 January 1957

Coulomb Interactions and the Diamagnetism of Free Electrons. II .... Hideo Kanazawa 1
The Functional Integrals in Quantum Theory .... Takeshi Kanki, Koichi Murata & Sigenobu Sunakawa 7
A Lattice Model of Liquid Helium. II .... Hirotsugu Matsuda & Takeo Matsubara 19

A Method of Renormalization for Unstable Particles .... Takao Okabayashi & Shigeo Sato 30
Relation between the Nuclear Collective Model and the Individual Particle Model with Configurational Mixing .... Satio Hayakawa & Toshio Marumori 43
On the Bethe-Salpeter Equation and the Excited States of the Hydrogen Atom .... Hideji Kita & Masami Wakano 63
Electromagnetic Properties of Deuteron. II .... Kiyomi Itabashi 80
On the Spins and Decay Interactions of $K_{\mu 3}$ and K_{e3} .... Susumu Furuichi, Tatsuro Kodama, Shuzo Ogawa, Yoshiko Sugahara, Akira Wakasa & Minoru Yonezawa 89
On the Universality of the Weak Interactions .... Suteo Goto 107

Letters to the Editor:

Elastic Scattering of 24.6 MeV Alpha Particles by Au .... S. Igarasi & T. Takano 124
On the Effective Normal Fluid Density of Solution of He^3 in He^4 .... S. K. Trikha & V. S. Nanda 126

Errata:

Energy Loss of a Charged Particle traversing Superconductors (Vol. 16, p. 131) .... S. Hayakawa & K. Kitao 129
Energy Loss of a Charged Particle traversing Ionized Gas and Injection Energies of Cosmic Rays (Vol. 16, p. 139) .... S. Hayakawa & K. Kitao 129
A New Formulation on the Electromagnetic Field (Vol. 16, p. 684) .... T. Ohmura 129
Contents of Journ. Phys. Soc. of Japan, Vol. 11, No. 12 130

Vol. 17, No. 2 February 1957

On a Solution of Field Equations in Einstein's Unified Field Theory. II .... N. N. Ghosh 131
Note on the Isotopic Spin of the Antiparticle .... Shinzô Nakai 139
A Method of Calculation of Electrical Conductivity .... Huzio Nakano 145
One-Center Expansion of Molecular Wave Function. II
——*Lower Excited States of H_2*—— .... Sigeru Huzinaga 162

One-Center Expansion of Molecular Wave Function. III
—*He-He Repulsive Potential*—................Sigeru Huzinaga 169
Theory of the Magnetic Properties of Ferrous and Cobaltous Oxides. I ...
....Junjiro Kanamori 177
Theory of the Magnetic Properties of Ferrous and Cobaltous Oxides. II ..
....Junjiro Kanamori 197
Antiferromagnetism of Zn-Ferrite.........Masashi Tachiki & Kei Yosida 223
Hydrodynamical Treatment of Multiple Meson Production in High Energy Nucleon-Nucleus Collisions ....
.... Saburo Amai, Hiroshi Fukuda, Chikashi Iso & Masatomo Sato 241
Note on Models of Multiple Meson Production at Extremely High Energy
....Ziro Koba 288

Letters to the Editor:

The Surface Tension of Liquid He^3 ....S. K. Trikha & O. P. Rustgi 303
Note on Bloch-Nordsieck Transformation and Electron-Lattice Interaction ....
....H. Kanazawa 304
On the Exchange Effect in the Stripping Reactions ....
.....................................T. Kammuri, R. Nakasima & S. Takagi 306
A Model for the Inelastic Scattering of Nucleons............................S. Okai 308

Contents of Journ. Phys. Soc. of Japan, Vol. 12, Nos. 1 & 2.........311, 312

Vol. 17, No. 3 March 1957

An Attempt of Generalizing the Hypothesis of Charge Independence. I
—*Selection Rule for the Decay Process*—....................
.... Osamu Hara & Yasunori Fujii 313
Effect of Hard Core on the Binding Energies of H^3 and He^3. II ....
.... Takashi Ohmura, Masato Morita & Masami Yamada 326
On the Origin of the Magnetic Anisotropy Energy of Ferrites ....
.................................Kei Yosida & Masashi Tachiki 331
Pion Theory of Three-Body Forces...Jun-ichi Fujita & Hironari Miyazawa 360
Spin-Orbit Coupling in Heavy Nuclei ....
.... Juh-ichi Fujita & Hironari Miyazawa 366
Effects of the Central Spin on Planetary Motion ....Anadijiban Das 373

Low's Scattering Equation and S-Matrix ....Hideo Fukutome 383
General Integral Formula of Perturbation Term in the Quantized Field Theory.................................... Noboru Nakanishi 401
Quantum Field Theory of Unstable Particles ....Huzihiro Araki, Yasuo Munakata, Masaaki Kawaguchi & Tetsuo Goto 419
The Magnetic Octupole Moments of Nuclei ....Shota Suekane & Yoshio Yamaguchi 443
The Hexadecapole Moments of Atomic Nuclei ....Shota Suekane & Yoshio Yamaguchi 449
On the Wave Propagation in the Non-Linear Fields. I......Tosiya Taniuti 461
Theory of the Susceptibility and Specific Heat of He^3 ......Sigeo Yomosa 487

Letters to the Editor:

Antiproton-Nucleus and Antiproton-Proton Interactions .... M. Nozawa, T. Goto, N. Yajima & R. Nakasima 504
Remarks on the Elastic Scattering of Deuterons by Heavy Nuclei ....Y. Nishida 506
K-π Interactions and K^+-N Scattering......................................S. Minami 508
Quantum Numbers for Lepton Processes ....Y. Katayama 510
He-He Repulsive Potential...S. Huzinaga 512
Equivalence between the Line Width and the Rate of Energy Relaxation in the Inversion Spectrum of Ammonia..K. Tomita 513
The Coupling Constants of Strong Interactions ....S. Miyachi 515
A Remark on the Lepton Processes ....S. Goto 517
On a Classification of Light Particles ....K. Senba 519
Some Identities for Renormalization Constants in S(S) and PS(PS) Meson Theories .. .. K. Hiida 520

Errata:

On the Quantum Mechanics-like Description of the Theories of the Brownian Motion and Quantum Statistical Mechanics (Vol. 16, p. 71) ....N. Saito & M. Namiki 522

Vol. 17, No. 4 April 1957

On the Vibration of Disordered Linear Lattice. I...................... .... Jun-ichi Hori & Takashi Asahi 523
Cluster Development Method in the Quantum Mechanics of Many Particle System. I......................Fumiaki Iwamoto & Masami Yamada 543

On the Elastic Scattering of Charged Particles by Nuclei in the Intermediate Energy Region .... S. N. Ghoshal & B. B. Baliga 556

Saturation of Nuclear Forces .... Neutron Proton Scattering .... A. B. Bhatia & S. M. Shah 561

The l-Forbidden Magnetic Dipole Transitions .... Akito Arima, Hisashi Horie & Mitsuo Sano 567

Pion-Nucleon Scattering and Structure of Fouth-Order Matrix Elements in Ps(Ps) Meson Theory .... Kugao Nakabayasi & Kazu Hasegawa 581

Mathematical Formulation of the Gell-Mann-Nishijima Scheme for New Particles .... Sigeo Hanawa 592

Letters to the Editor:

On the Air Shower Core .... S. Hasegawa 603

A Kinematical Test for the Relation between the Coupling Constants in Meson Theory .... K. Hiida 605

Electron-Neutron Interaction .... F. Ando & H. Miyazawa 607

Viscosity and Heat Conductivity of Liquid He^3 .... S. K. Trikha 609

On the Annihilation Cross Section of the Antinucleon and the Nucleon .... Y. Yamaguchi 612

Interaction with the Sound Quanta in a System consisting of Two Kinds of Charged Particles —*The Method of Supplementary Variables*— .... Z. Galasiewicz 613

The Catalysis of Nuclear Fusion Reactions by μ^--Mesons .... C. Hayashi, T. Nakano, M. Nishida, S. Suekane & Y. Yamaguchi 615

Errata:

Helium Capturing Reactions in Stars (Vol. 16, p. 507 .... S. Hayakawa, C. Hayashi, M. Imoto & K. Kikuchi 618

On the Spins and Decay Interactions of $K_{\mu 3}$ and K_{e3} (Vol. 17, p. 89) .... S. Furuichi, T. Kodama, S. Ogawa, Y. Sugahara, A. Wakasa & M. Yonezawa 618

Vol. 17, No. 5 May 1957

Quantum-Electrodynamical Corrections to Energy-Levels of Helium .... Huzihiro Araki 619

The Penetration of the Diffuse Nuclear Potential Barrier ..... Ken Kikuchi 643

The Photon-Nucleon Scattering ...... Shigeo Minami & Yoshio Yamaguchi 651

Note on the Ferromagnetic Resonance Absorption ...... Takehiko Oguchi 659

On Solutions of He^3 and He^4 .... S. K. Trikha & V. S. Nanda 679
On Collective and Internal Motions in a Bose System .... Toshiyuki Nishiyama 711

Letters of the Editor:

On the Systematization of the Strongly Interacting Particles .... M. Ida 733

Errata:

Remarks on the Elastic Scattering of Deuterons by Heavy Nuclei (Vol. 17, p. 506) .... Y. Nishida 734
Contents of Journ. Phys. Soc. of Japan, Vol. 12, Nos. 3 & 4 .... 735, 736

Vol. 17, No. 6 June 1957

Giant Stars with Shell Sources of C-N and *p-p* Reactions .... Chushiro Hayashi 737
Selection Rule imposed by Mass Reversal .... Tadashi Ouchi 743
Investigation of the Chew-Low Equation by Iteration .... Haruyuki Fujino & Jun'ichi Osada 751
On the Asymptotic Conditions in Quantum Field Theory .... Kazuhiko Nishijima 765
Mass Difference of Σ^+, Σ^- and Σ^0 Hyperons .... Hiroshi Katsumori 803
A Remark on High Energy Phenomena .... Saburo Amai, Toshiyuki Murota & Minoru Nishida 807

Letters to the Editor:

Effect of Long-Range Correlations on Free Electron Diamagnetism .... B. Donovan, H. Kanazawa & N. H. March 813
Acceleration of Cosmic Rays by Hydromagnetic Wave .... Y. Terashima, K. Kitao & K. Ogawa 814
Interpretation on the Ratio of the Emission Probabilities for Protons and Neutrons.. .... R. Nakasima & K. Kikuchi 816
Some Remarks on the Charged Mesic Decay of $^3H_\Lambda$ ...... T. Ogimoto & Y. Yamaguchi 817
An Attempt of Generalizing the Invariance of the Theory under the Charge Conjugation .... O. Hara, Y. Fujii & Y. Ohnuki 819
Pion-Nucleon Interaction according to the Previous Theory .... O. Hara, Y. Fujii & Y. Ohnuki 820
The Annihilation of Antinucleon according to the Previous Theory .... O. Hara, Y. Fujii & Y. Ohnuki 822

The Production Ratio of K^+ to K^- Mesons.............Y. Kakudo & K. Kobayakawa 823

Errata:

On the Energy Matrix of the Tensor Forces (Vol. 16, p. 256)...........T. Sasakawa 825
Contents of Journ. Phys. Soc. of Japan, Vol. 12, No. 5.................. 826
Contents and Author Index to Vol. 17 ....i-viii

Vol. 18, No. 1 July 1957

Theory of Liquid He^3..................................S. K. Trikha 1
On the Electron-Lattice Interaction in Non-Polar Semiconductors...Shigeharu Koshino 23
Remarks on Mayer's Reduced Density Matrix Method...Yukio Mizuno & Takeo Izuyama 33
Parity Nonconservation and Decay of Hyperon...Shigeo Minami & Yoshio Yamaguchi 39
Criticism on the Assumptions in the Formal Scattering Theory...Tsutomu Imamura 51
Cloudy Crystal Ball Model for Neutron Reactions at Higher Energies.................................. Mitsuji Kawai, Masayuki Nagasaki, Michitoshi Soga, Tokuo Terasawa, Haruo Ui & Yasushi Wada 66
Charge Distribution of Pions produced in High Energy Nuclear Collisions...Yoshihiro Yamamoto 81

Letters to the Editor:

$E2+M1$ Mixed Transitions in Heavy Odd A Nuclei..................M. Kawamura 87
On the Effective Coupling Strengh in the Static Pion Theory...T. Kobayashi. J. Osada & S. Tani 89
Numerical Discussions on P-Wave Meson-Nucleon Scattering..T. Sawaguri & J. Osada 91
Stationary Fusion Reactions at Low Temperatures...T. Nishiyama, T. Sekiya & Y. Watanabe 93
Some Remarks on the Goldhaber Model for Strange Particles.............R. Kawabe 96
The Indirect (p, d) Process..............................H. Hagiwara & M. Tanifuji 97
Magnetic Dipole Sum Rules for Photodisintegration of the Deuteron...M. L. Rustgi & J. S. Levinger 100

Addenda:

On the Asymptotic Conditions in Quantum Field Theory (Vol. 17, p. 765)... K. Nishijima 101

Errata:
Quantum Field Theory of Unstable Particles (Vol. 17, p. 419) ....H. Araki, Y. Munakata, M. Kawaguchi & T. Goto 101
Contents of Journ. Phys. Soc. of Japan, Vol. 12, No. 6 102

Vol. 18, No. 2 August 1957

Inelastic Scattering of Nucleons by Light Nuclei ....Ryoichi Kajikawa & Wataro Watari 103
Covariant Solutions of the Bethe-Salpeter Equation ....H. S. Green & S. N. Biswas 121
The Repulsive Potential between Two Normal Helium Atoms ....Sigeru Huzinaga 139
On Einstein's Relativistic Theory of the Non-Symmetric Field ....Mineo Ikeda 154
Inelastic Scattering of Neutrons and Surface Direct Processes....Haruo Ui 163
Nuclear Magnetic Relaxation in Solid Hydrogen ....Tôru Moriya & Kazuko Motizuki 183
On the Theory of the Unstable Particle in Lee's Model......Kunio Naito 200

Letters to the Editor:

Ratio of Hyperons produced by Cosmic Rays.............................S. H. Hsieh 209
On the Observability of a New Hyperon ....S. H. Hsieh 211
On the Heavy Meson Production in the π^--Proton Reaction ....T. Ogimoto & T. Shimizu 213
Contribution Rules and Method of Proofreading .... i-iv
Contents of Journ. Phys. Soc. of Japan, Vol. 12, No. 7 v
Announcement on "Supplement" of Prog. Theor. Phys., No. 4 vi

Vol. 18, No. 3 September 1957

On the Magnetic Properties of Cubic Cerium ....Tsuyoshi Murao & Takeo Matsubara 215
The Electric-Octupole Transitions of Nuclei.................Mitsuo Sano 223
A Theory of Elementary Particles ....Takao Tati 235

Theory of Collective Oscillation of Electrons in Solids..Yoshi H. Ichikawa 247

π^--P Interaction in High Energy Region ...Daisuke Ito, Tetsuro Kobayashi, Miwae Yamazaki & Shigeo Minami 264

On the Structure of Extensive Air Showers ......Akira Ueda & Naofumi Ogita 269

On the Subsidiary Conditions in the Bohm-Pines Theory of Electron Plasma ......Hideo Kanazawa 287

The Parity Conservation and the Strength of the Interaction of Elementary Particles......Sho Tanaka 295

Letters to the Editor:

On the Production of Mesons in Hydrogen and Carbon above 10 GeV. II......Y. Watase, S. Mitani, K. Suga & Y. Tanaka 314

On the Pressure Shift of the Inversion Frequency of Ammonia ......K. Tomita 316

Pion Production in Nucleon-Nucleon Collisions in BeV Range......T. Kobayashi 318

On the Cut-off Theory in Quantum Field Theory......S. Aramaki 320

Preliminary Note on the Indirect (p, t) Process......H. Hagiwara & M. Tanifuji 322

On the Many-Body Pseudopotential for a System of Hard-Spheres ......R. Abe 324

Ferromagnetism of a Gas of Hard Sphere Fermions with Spin 1/2......T. Morita, R. Abe & S. Misawa 326

Dispersion Relations in Nucleon-Nucleon Scattering ....S. Matsuyama & H. Miyazawa 328

Contents of Journ. Phys. Soc. of Japan, Vol. 12, No. 8 330

Vol. 18, No. 4 October 1957

Nuclear Matrix Element Relations in the Fermi Theory of Beta Decay......Tino Ahrens 331

Cluster Development Method in the Quantum Mechanics of Many Particle System. II——*Saturation of Nuclear Forces*——......Fumiaki Iwamoto & Masami Yamada 345

A Lattice Model of Liquid Helium. III ——*Equilibrium Properties of Liquid He*^{4} *and Mixtures of He*^{4} *and He*^{3}——...Hirotsugu Matsuda 357

On the Vibration of Disordered Linear Lattice. II......Jun-ichi Hori 367

Anomalous Magnetic Moments of Hyperons and Mirror Theorem......Hiroshi Katsumori 375

Static Model in the Moson Theory ......Masao Sugawara 383

A Remark on the Moments of Inertia of Rotating Nuclei .... Satio Hayakawa & Toshio Marumori 396

On the Ground Level Splitting of Mn^{++} and Fe^{+++} in Nearly Cubic Crystalline Field .... Hiroshi Watanabe 405

On the Excition Problem in Insulating Crystals .... Yosihisa Takeuti 421

Ionization Loss Near the Origin of an Electron Pair of Very High Energy .... Iwao Mito & Hiroshi Ezawa 437

Letters to the Editor:

On the Line Width in Ferromagnetic Resonance .... S. Takeno 448

Errata:

$E2+M1$ Mixed Transitions in Heavy Odd A Nuclei (Vol. 18, p. 87) .... M. Kawamura 450

Vol. 18, No. 5 November 1957

Some Considerations on the High-Energy Electron-Proton Scattering and the Nucleon Mass Difference ...... Kichiro Hiida & Makoto Sawamura 451

On the Lattice Model of Liquid Helium proposed by Matsubara and Matsuda .... Tohru Morita 462

Pion-Nucleon Scattering and the Structure of the Pion .... Shigeru Machida 467

Pairing Energy of Nuclear Particles .... Morikazu Nomoto 483

Analysis of Neutron-Electron Interaction in the Relativistic Perturbation Theory .... Kin-ichi Ishida 493

Deuteron Production by Nucleons bombarding Atomic Nuclei .... Ken Kikuchi 503

Band Theory of Superexchange Interaction .... Jun Kondo 541

Letters to the Editor:

On the Spin-Lattice Relaxation Process in Ferromagnets .... F. Terasaki & I. Mannari 552

The Artificial Satellite and the Relativistic Red Shift .... A. Das 554

Efficiency of Acceleration of Relativistic Particles in the Crab Nebula .... S. Hayakawa & Y. Terashima 555

Contents of Journ. Phys. Soc. of Japan, Vol. 12, No. 9 558

Vol. 18, No. 6 December 1957

A New Approach to a Bound State..................Tsutomu Imamura 559
Nuclear Magnetic Relaxation in Liquid Hydrogen............Tôru Moriya 567
Description of Pauli Matter as a Continuous Assembly of Small Rotating Bodies...................Takehiko Takabayasi & Jean-Pierre Vigier 573
Multiple Production of Particles and Hydrodynamical Aspect of Quautum Theory of Fields......................Mikio Namiki & Chikashi Iso 591
On the Theory of the Unstable Particle. II ....Kunio Naito 614
Electrodisintegration of He^4 Nucleus...Toshinosuke Muto & Takashi Sebe 621
Photodisintegration of Deuteron near 11 MeV ....Shih Hui Hsieh 637
Electronic Energy Levels of Polyene Chains.......................... ....Sigeru Huzinaga & Tasuke Hasino 649

Letters to the Editor:

On the Ground State Spin of Ti^{47} and Mn^{55} ....S. Yanagawa 661
A Comment on Bardeen's Theory of Superconductivity......S. Nakajima & T. Kasuya 662
Angular Correlation of Internal Bremsstrahlung and Successive Nuclear Gamma-Ray in the Radiative *K*-Capture ....Y. Koh, O. Miyatake & Y. Watanabe 663
Spin and Size of Λ^0 Particle ....K. Nishimura 665
The Utility of the "Individual Γ_5 Transformation" ....K. Fujii & K. Iwata 666
Low Lying Levels of P^{32} and *jj* Coupling..............................S. P. Pandya 668

Contents of Journ. Phys. Soc. of Japan, Vol. 12, No. 10................. 670
Contents and Author Index to Volume 18 .... i-viii

Vol. 19, No. 1 January 1958

Many-Body Pseudopotential for Hard-Sphere Interaction........Ryuzo Abe 1
Two-Pion-Exchange Nuclear Potential ....Michiji Konuma, Hironari Miyazawa & Shoichiro Otsuki 17
Multipole Mixing in Odd Mass Spheroidal Nuclei..................... ....Ryuzo Nakasima, Shuichiro Yamasaki & Yasukazu Yoshizawa 31
Dispersion Relation for the Photoproduction of *K*-Mesons............. ....Susumu Okubo 43
On the Form Factor of Liquid He^4 at Absolute Zero. I........Ryuzo Abe 57

On the Propagation of the Hydromagnetic Waves in Compressible Ionized Fluid ....Tosiya Taniuti 69
Note on the Collision Matrix for the Nuclear Reactions. I ....Mitsuji Kawai & Masayuki Nagasaki 77
The Dispersion Relations for the Scattering of Photons from Proton .... Tomoya Akiba & Iwao Sato 93
On the Decay Interactions of Strange Particles ....Yoshihiko Miyachi 112

Letters to the Editor:

Molecular Orbital Treatment of $1s\sigma 2p\sigma\, {}^3\Sigma_u$ State of H_2....................S. Huzinaga 125
Contents of Journ. Phys. Soc. of Japan, Vol. 12, Nos. 11 & 12........127, 128
Rules for Contribution and Proofreading .... i-iv

Vol. 19, No. 2 February 1958

An Attempt at Reformulating Pion-Nucleon Interaction. I ——*Introduction of K-Space*—— ....Osamu Hara, Yasunori Fujii & Yoshio Ohnuki 129
Invariants in $K_{\mu 3}$ and K_{e3} Decays ....R. Gatto 146
Effect of Electron Exchange on the Dispersion Relation of Plasma Oscillations ....Hideo Kanazawa & Sho-ichiro Tani 153
General Theory of Infrared Divergence...............Noboru Nakanishi 159
Theory of Direct Interaction in Nucleon Inelastic Scattering .... Shiro Yoshida 169
Multiple Meson Production in Antinucleon-Nucleon Annihilation ....Nobuo Yajima & Keizo Kobayakawa 192
Remarks on Spin-Wave Theory for the Ferromagnetic Exchange Problem .. ..Isao Mannari 201

Letters to the Editor:

The Exciton-Lattice Interaction and the Line Shape of the Exciton Absorption Band.. .... Y. Toyozawa 214
On Puppi's Determination of the Pion-Nucleon Coupling Constant.................................. K. Matsumoto, S. Otsuki, H. Shimodaira & E. Yamada 216
On the Applicability of the Pion-Theoretical Nuclear Potential.. S. Otsuki, R. Tamagaki & W. Watari 217
High Energy Gamma-Rays from the Crab Nebula ....S. Hayakawa 219
Contents of Journ. Phys. Soc. of Japan, Vol. 13, No. 1................. 220

Vol. 19, No. 3 March 1958

Quantum Electrodynamics with the Indefinite Metric —*Non-Lorentz-Invariance of the Gupta Formalism*— ....Sigenobu Sunakawa 221
Dispersion Relations for K Meson-Nucleon Scattering ....Keiji Igi 238
On the Longitudinal and Transverse Polarization of Positrons in μ^+-Meson Decay...............Shoichi Hori, Hiroshi Segawa & Akira Wakasa 249
Theory of Cohesive Energy of LiH Crystal —*The Method of Semi-Localized Crystalline Orbital (SLCO). I*— ....Akira Morita & Kenji Takahashi 257
Antinucleon-Nucleon Interactions ....Ziro Koba & Gyo Takeda 269
Formulas in the Fermi Theory of Beta-Decay. I —*Beta-Spectrum*— ....Zyun-itiro Matumoto & Masami Yamada 285
On the Static Approximation of the γ_5 Meson Theory....Akira Kanazawa 330

Letters to the Editor:

On the Recombination Processes by the Auger Effect........................M. Nagae 339
On the Auger Effect in the Deep Traps in Si..............................M. Nagae 341
Mass Levels and Relative Parities of Baryons...........................H. Katsumori 342
Effect of Electron-Electron Scattering on Hall Mobility of Electrons in n Semiconductors ....M. S. Sodha & P. C. Eastman 344
Density of the Normal Component for Solutions of He^3 and He^4..........S. K. Trikha 346
The Non-Indication of the "Anomalous" Scattering of Mu-Mesons...S. Fukui, T. Kitamura & Y. Watase 348
Ground State Energy of Bose System with Lennard-Jones Potential...........R. Abe 350
Contents of Journ. Phys. Soc. of Japan, Vol. 13, No. 2 352

Vol. 19, No. 4 April 1958

π-N Interactions in GeV Region ....Yujiro Kakudo, Tetuo Goto & Ryuzo Nakasima 353
Partiy-Nonconservation and the Spins of the Strange Particles...Kiyomi Itabashi 359
Separable Dynamical Systems of Staeckel in Flat Space........Giiti Iwata 369
Perfect Imaging Dynamical Systems.......................Giiti Iwata 375

Elastic Scattering of Deuterons by Heavy Nuclei.......Yoshihiko Nishida 389

Low Levels of Some Nuclei in the $d_{3/2}-f_{7/2}$ Shell.......Sudhir P. Pandya 404

On the Form Factor of Liquid He^4 at Absolute Zero. II.......Ryuzo Abe 407

Nuclear Binding Energies and Low-Lying Energy Levels in the $2s_{1/2}$ and $1d_{3/2}$ Shells ....Akito Arima 421

Letters to the Editor:

Quantization of Spin Wave Field...I. Mannari 451

Note on Energy Levels of Polyatomic Molecules ....S. Datta Majumdar 452

Natures of Nuclear Forces indicated by the Photodisintegration of the Deuteron. III.. ....S. H. Hsieh 453

An Attempt of a Nonlinear Field Theory ....H. Kita 454

Contents of Journ. Phys. Soc. of Japan, Vol. 13, No. 3.................. 457

Announcement on Supplement of Prog. Theor. Phys., Nos. 1, 2, 3, 4, 5 & 6.. 458

Vol. 19, No. 5 May 1958

The Conservation Laws in the Lepton Process and Two Kinds of Neutrinos .... Ichiro Kawakami 459

Cepheid Vibration...T. C. Roy 470

The Phenomenological Model of the Interaction of Elementary Particles. I .... Kanji Fujii & Kenzo Iwata 475

Phenomenological Analysis of the Decay Processes of the Σ- and Λ-Hyperons .... Yoshio Yamaguchi 485

On the Collective Mode of Internal Motion of the Nucleus to be coupled with the Irrotational Surface Motion......................... ..Sinobu Nagata, Ryozo Tamagaki, Saburo Amai & Toshio Marumori 495

Dispersion Relations in Nucleon-Nucleon Scattering..................... ....Sadahiko Matsuyama & Hironari Miyazawa 517

Theory of Cohesive Energies and Energy-Band Structures of Diamond-Type Valence Crystals ——*The Method of SLCO.* II—— ....Akira Morita 534

A General Theory of Magnetic Resonance Saturation.....Kazuhisa Tomita 541

Letters to the Editor:

Note on the Strange Particle Effects in S-Wave Pion-Nucleon Scattering..K. Nakayama 581

On the Lateral Distribution of the Electron Component in Extensive Air Showers.... ....A. Ueda & N. Ogita 582

A Possible Size Effect on the Plasma Oscillation of Electrons in Solids.. Yoshi H. Ichikawa 585
Hyperon Decays and Characteristics of Interactions between Elementary Particles...Y. Taguchi & R. Kawabe 586
The Spirality of the Decay Product............................K. Fujii & K. Iwata 589
Reevaluation of the Electric Quadrupole Moment of the Deuteron...H. Narumi, T. Watanabe & O. Nakahara 591
A Covariant Interpretation of the Existence of the Parity Non-Conservation and the New Freedoms for Elementaty Particles..................................K. Gotô 592
Antinucleon Annihilation and Multiplicity of Emitted Pions ....Z. Koba 594
Cluster Expansion of the Ground State of a Bose Particle System..........F. Iwamoto 595
Exact Treatment of Bardeen's Theory of Superconductivity in the Strong Coupling Limit.......................................Y. Wada, F. Takano & N. Fukuda 597

Vol. 19, No. 6 June 1958

Single Particle Transition in Neutron Inelastic Scattering by Deformed Nuclei........................Hiroyuki Matsunobu & Shiro Yoshida 599
A Theory of Clothed Unstable Particles. I..............Noboru Nakanishi 607
The Possible Existence of a Neutral Meson with Isotopic Spin 0..Yoshio Yamaguchi 622
Isotopic Spin and Strange Particles........................Gyo Takeda 631
Long-Range Spin Interaction and the Meissner-Ochsenfeld Effect............................. Robert McCredie May & Max Robert Schafroth 646
Cluster Theory of Condensing Systems.................Kazuyoshi Ikeda 653
Quantum-Mechanical Many-Body Problem with Hard-Sphere Interaction...Ryuzo Abe 699
Quantum Mechanics of Strongly Interacting Particles with an Application to Lennard-Jones Potential ....Ryuzo Abe 713
General Solution of the Bethe-Salpeter Equation in Instantaneous Interaction Approximation....................................S. N. Biswas 725

Letters to the Editor:

A Theory of Lepton Which is Invariant under Space Inversion ....K. Sekine 740
On the Hydrodynamical Theory in Multiple Particle Production........M. Hamaguchi 741
Note on Heavy Ion induced Nuclear Reactions ....R. Nakasima 743

Elastic Scattering in High Energy and Impulse Approximation .... Y. Sakamoto & T. Sasakawa 745

On the $|\Delta I|=1/2$ Rule for the Decay of Σ .... K. Itabashi 747

An Example of Isentropic Steady Flow in the Magnetohydrodynamics ...... T. Taniuti 749

Contents of Journ. Phys. Soc. of Japan, Vol. 13, Nos. 4 & 5 .... 751, 752

Contents and Author Index to Volume 19 .... i x

Vol. 20, No. 1 July 1958

Relativistic Magnetohydrodynamics .... Ken-iti Gotô 1

On the Orbital Approach to the Many-Electron Problem in Molecule .... Sigeru Huzinaga 15

On the Representations of Field Quantities .... Hitoshi Wakita 35

Theory of Line-Shapes of the Exciton Absorption Bands .. Yutaka Toyozawa 53

Low Energy Electron-Hydrogen Scattering .... Takashi Ohmura, Yasuo Hara & Takahiko Yamanouchi 82

An Attempt at Reformulating Pion-Nucleon Interaction. II ——*Scattering of Antiproton by Nucleon*—— .... Osamu Hara & Yasunori Fujii 89

Letters to the Editor:

Rigidity for Octupole Type Surface Deformation and Shell Structure .... S. Suekane & W. Watari 108

Stellar Syntheses of the α-Particle Nuclei Heavier than Ne^{20} .... C. Hayashi, M. Nishida, N. Ohyama & H. Tsuda 110

The Global Symmetry of Pion-Baryon Interactions and Bound States of Hyperon-Nucleon System .... Y. Yamaguchi 112

A Note on the Specification of Nuclear Potentials .... T. Hamada 114

Contents of Journ. Phys. Soc. of Japan, Vol. 13, No. 6 116

Vol. 20 No. 2 August 1958

Global Symmetry and the Branching Ratios for the K^- Capture by the Nucleon . . . . Ken Kawarabayashi 117

Phenomenological Model on the Interactions of Elementary Particles. II . . . . Kanji Fujii & Kenzo Iwata 126

Charge-Transfer Forces in Molecular Compounds . . . . Shigeyuki Aono 133

Isotopic Spin Selection Rule in Σ-Decays . . . Tetsuo Eguchi & Shozo Nagata 144

Electromagnetic Properties of Nucleons . . . . Akira Kanazawa, Shinya Furui & Tetsuro Sakuma 149

On the Exchange Magnetic Moments . . . . . Eiichi Kuroboshi & Yasuo Hara 163

Proton-Proton Scattering and Pion Theory of Nuclear Forces . . . . Shoichiro Otsuki 171

Neutron-Proton Scattering and Pion Theory of Nuclear Forces . . . . Wataro Watari 181

Cluster Sums and Related Coefficients of the Ising Model . . . . Shigetoshi Katsura 192

Effects of Virtual Nucleon Pairs to the Electromagnetic Structure of the Nucleon . . . . Shigeo Goto & Shigeru Machida 216

Letters to the Editor:

On a Non-Adiabatic Approximate Method in the Non-Linear Interaction Theory . . . . S. Ozaki 239

An Example of One-Dimensional Oscillatory Motion in Magnetohydrodynamics . . . . N. Mugibayashi 241

Absorption Effects in Antinucleon Phenomena. I . . . . Y. Kakudo, T. Kammuri & R. Nakasima 243

Equivalent Hamiltonian of an Electron Gas at High Density . . . . T. Nishiyama 245

Coupling Constant of Kaon-Baryon Intetaction. I . . . . A. Komatsuzawa, R. Sugano & Y. Nogami 246

Coupling Constant of Kaon-Baryon Interaction. II . . . . A. Komatsuzawa, R. Sugano & Y. Nogami 249

A Note on the Magnetic Relaxation in a Low Field . . . . M. Tanaka 251

A Remark on the Anomalous Magnetic Moment in the Static Model . . . . Y. Hara & K. Kawarabayashi 252

Contents of Journ. Phys. Soc. of Japan, Vol. 13, No. 7 255

Vol. 20 No. 3 September 1958

On the Concept of Potential in Quantum Field Theory.....Abraham Klein 257
A Comparison of Plane Wave Solutions in General Relativity with Those in Non-Symmetric Theory.............................Hyôitirô Takeno 267
The Magnetic Properties of the Praseodymium and the Neodymium Metals .... Tsuyoshi Murao 277
Parity Nonconservation and the Beta-Spectrum of RaE............Jun-ichi Fujita, Masami Yamada, Zyun-itiro Matumoto & Seitaro Nakamura 287
Mesic Correction to the Beta-Decay in a Nucleus ....Jun-ichi Fujita, Zyun-itiro Matumoto, Eiichi Kuroboshi & Hironari Miyazawa 308
Spontaneous Fission Half-Lives ....Tatuya Sasakawa & Masaru Yasuno 315
Effects of Defects on Lattice Vibrations —*Thermodynamical Properties*— ....Kaoru Yamahuzi & Tomoyasu Tanaka 327
Composite Model of Pion and Pion-Nucleon Interaction.................. ....Chiaki Ihara & Shigeaki Hatano 356
Vibrational Thermodynamic Properties of Lattices with Defects. I —*The Linear Lattice*—.....J. Mahanty, A. A. Maradudin & G. H. Weiss 369

Letters to the Editor:

On the Consistency between the P-Wave Dispersion Relation and the Experiment.... .... T. Tsuchida & A. Kanazawa 395
On the Radiative Corrections to the Scattering of Mesons in an External Electromagnetic Field.....................................A. K. Bhatia & J. Sucher 397
On Parity Nonconservation .... T. Tati 398
On the Positronium in Metals..................................H. Kanazawa 400
Contents of Journ. Phys. Soc. of Japan, Vol. 13, No. 8 402

Vol. 20, No. 4 October 1958

Dispersion Relation for K Meson-Nucleon Scattering and Its Application... ....Keiji Igi 403
Hypothesis of Invariance of CP Alone and Conservation of Parity in Strong Interactions ....Chikashi Iso 410
Quantum Statistical Mechanics of Electron-Phonon System. II —*Specific Heat and Spin Paramagnetic Susceptibility* — ....Hiroshi Ichimura 415

Relativistic Wave Equations with Maximum Spin Two. II .... Toshihiko Tsuneto & Izuru Fujiwara 439

Possible Experimental Tests on the Decay Interaction of Hyperons .... Kiyomi Itabashi 457

Perturbational Calculations of Propagators of the Elementary Particles interacting with the Gravitational Field .... Yoshio Miyatake 476

Effect of the Non-Relativistic Recoil of a Source Particle in Quantum Field Theories .... Jun'ichi Osada & Haruyuki Fujino 487

Tensor and Spin-Orbit Forces in Nucleon-Nucleon Scattering .... Ryozo Tamagaki 505

On the Wave Propagation in the Non-Linear Fields. II ..... Tosiya Taniuti 529

Indirect Coupling of Nuclear Spins in Antiferromagnet with Particular Reference to MnF_2 at Very Low Temperatures .... Tuto Nakamura 542

Quasi-Chemical Equilibrium Theory. II .... J. M. Blatt & Takeo Matsubara 553

Letters to the Editor:

Meson-Meson Interaction .... K. Igi & K. Kawarabayashi 576

Baryon Mass Spectrum .... H. Katsumori & K. Shimoura 578

First Excited State in Ca^{42} and Ca^{44} .... T. Komoda 580

Vol. 20, No. 5 November 1958

New Interpretation of Hyperonic Charge and Its Generalization to Leptons .... Takao Okabayashi 583

Bose-Einstein Lattice Gases equivalent to the Heisenberg Model of Ferro-, Antiferro- and Ferrimagnetism .... Tohru Morita 614

Nitrogen induced Nuclear Reactions in Sodium .... Ryuzo Nakasima 625

The Interaction between Two Normal Helium Atoms —*A Consistent Treatment*— .... Tasuke Hasino & Sigeru Huzinaga 631

The First Forbidden β-Decay .... Tsuneyuki Kotani & Marc Ross 643

Dispersion Relations and Vertex Properties in Perturbation Theory .... K. Symanzik 690

On the Tests of Gravitational Theories in terms of an Artificial Satellite .... Hidekazu Nariai & Yoshio Ueno 703

Equilibrium Properties of Classical Electron Gas in Uniform Positive Ion Distribution .... Yoshi H. Ichikawa 715
Bose-Einstein Lattice Gas Theory of Ferromagnetism .... Tohru Morita 728
Notes on the Magnetic Mirror Effect .... Masatomo Sato 737
A General Theory of Magnetic Double Resonance .... Kazuhisa Tomita 743

Letters to the Editor:

On the Absorptive Range in the Pion-Nucleon Collision at High Energies.... K. Ishida 774
An Illustrative Example of the Nuclear Collective Motion .... F. Iwamoto 776
Molecular Processes induced by μ^- Mesons in Hydrogen Bubble Chamber. I——*Transfer Process of μ^- Meson from Proton to Deuteron*——............................ M. Shimizu, Y. Mizuno & T. Izuyama 777
Absorption Effects in Antinucleon Phenomena. II.............................. Y. Kakudo, T. Kammuri & R. Nakasima 779
The Meissner-Ochsenfeld Effect in the Bogoliubov Theory.............................. J. M. Blatt & T. Matsubara 781

Errata:

A Comment on Bardeen's Theory of Superconductivity (Vol. 18, p. 662).............. S. Nakajima & T. Kasuya 783
Contents of Journ. Phys. Soc. of Japan, Vol. 13, No. 9 784

Vol. 20, No. 6 December 1958

Ground State Energy of Bose Particle System .... Ryuzo Abe 785
The Clebsch-Gordan Coefficients .... S. Datta Majumdar 798
Electronic Structure of the Exciton in Ionic Crystal——*Further Discussion of a Localized Exciton (Zero-th Order Description) and General Formulation of a Moving Exciton in Alkali Halides*—— .... Toshinosuke Muto, Seiichi Ôyama & Hiroshi Okuno 804
A Theory of Clothed Unstable Particles. II .... Noboru Nakanishi 822
The Dispersion Relation and the Pion-Nuclear Interacion Cross Section at Very High Energies.. Tetsuro Sakuma, Shinya Furui & Akira Kanazawa 835
An Analysis of Experimental Data on Extensive Air Showers .... Saburo Miyake 844
Theory of Unstable Particles in the Wave-Packet-Formalism............... .... Kunio Yamamoto 857

Quantum Theory in Pseudo-Hilbert Space..Gaku Konisi & Takesi Ogimoto 868
Derivation of the Two Nucleon Potential..............................Abraham Klein & Bruce H. McCormick 876
Magnetic Properties of the Iron-Group Anhydrous Chlorides..........................Junjiro Kanamori 890
Mass Reversal and Weak Interactions....................Tadashi Ouchi 909
Theory of Classical Fluids: Hyper-Netted Chain Approximation. I —— *Formulation for a One-Component System*—— ....Tohru Morita 920
Meson Production in Meson-Nucleon Interaction..............S. K. Kundu 939
On Quantum Theory of Transport Phenomena ——*Steady Diffusion*—— ....Sadao Nakajima 948
Foundation of Deformed Potential Model for Nuclear Rotation............................Kiyomi Ikeda, Minoru Kobayasi, Toshio Marumori, Sinobu Nagata & Takanori Shiozaki 960

Letters to the Editor:

Influence of the Exchange and Correlation on the Electron-Phonon Interaction in Metals..........T. Toya 971
Electrical Conductivity of Monovalent Metals..........T. Toya 973
Normal Vibrations of Copper..........T. Toya 974
A Note on the Elastic Scattering of High Energy Deuterons by Complex Nuclei..........Y. Nishida & H. Tanaka 976
Some Remarks on the Scattering Problem..........M. Ida 979
Superconductivity of Ferromagnetic Metals..........T. Kasuya 980
Proton-Proton Scattering in the GeV Region——*Criticism of the Blockhintsev-Bubelev Model*——..........J. Ôba & T. Goto 982

Errata:

Dispersion Relations in Nucleon-Nucleon Scattering (Vol. 19, p. 517)..........S. Matstyama & H. Miyazawa 983

Contents of Journ. Phys. Soc. of Japan, Vol. 13, Nos. 10 & 11.......... 984
Contents and Author Index to Volume 20.......... i x

Supplement No. 1 1955

Collected Papers on Meson Theory. I

Introduction .... Sin-itiro Tomonaga

1. On the Interaction of Elementary Particles. I .... Hideki Yukawa 1
Proc. Phys.-Math. Soc. Japan **17** (1935), 48–57

2. On a Possible Interpretation of the Penetrating Component of the Cosmic Ray .... Hideki Yukawa 11
Proc. Phys.-Math. Soc. Japan **19** (1937), 712–713

3. On the Interaction of Elementary Particles. II .... Hideki Yukawa & Shoichi Sakata 14
Proc. Phys.-Math. Soc. Japan **19** (1937), 1084–1093

4. On the Interaction of Elementary Particles. III .... Hideki Yukawa, Shoichi Sakata & Mituo Taketani 24
Proc. Phys.-Math. Soc. Japan **20** (1938), 319–340

5. On the Interaction of Elementary Particles. IV .... Hideki Yukawa, Shoichi Sakata, Minoru Kobayasi & Mituo Taketani 46
Proc. Phys.-Math. Soc. Japan **20** (1938), 720–745

6. The Mass and the Lifetime of the Mesotron .... Hideki Yukawa & Shoichi Sakata 72
Proc. Phys.-Math. Soc. Japan **21** (1939), 138–140

7. Mass and Mean Lifetime of the Meson .... Hideki Yukawa & Shoichi Sakata 75
Nature **143** (1939), 761–762

8. Note on the Absorption of Slow Mesotrons in Matter .... Hideki Yukawa & Taisuke Okayama 76
Sci. Pap. I. P. C. R. **36** (1939), 385–389

9. The Spontaneous Disintegration of the Neutral Mesotron (Neutretto) .... Shoichi Sakata & Yasutaka Tanikawa 81
Phys. Rev. **57** (1940), 548

10. Effect of the Nuclear Coulomb Field on the Capture of Slow Mesons .... Sin-itiro Tomonaga & Gentaro Araki 82
Phys. Rev. **58** (1940), 90–91

11. Connection between the Meson Decay and the Beta-Decay .... Shoichi Sakata 83
Phys. Rev. **58** (1940), 576

12. On the Wave Equation of Meson ... Mituo Taketani & Shoichi Sakata 84
Proc. Phys.-Math. Soc. Japan **22** (1940), 575–770

13. Note on Casimir's Method of the Spin Summation in the case of the Meson .... Shoichi Sakata & Mituo Taketani 98
Sci. Pap. I. P. C. R. (1940), 1-11

14. On the Theory of the Meson Decay .... Shoichi Sakata 109
Proc. Phys.-Math. Soc. Japan **23** (1941), 283-291

15. On Yukawa's Theory of the Beta-Disintegration and the Lifetime of the Meson .... Shoichi Sakata 118
Proc. Phys.-Math. Soc. Japan **23** (1941), 291-309

16. On the Meson Theory of the Penetrating Component of Cosmic Radiation .... Minoru Kobayasi 137
Proc. Phys.-Math. Soc. Japan **23** (1941), 891-914

17. On the Mesotron of Spin One-Half .... Tatuoki Miyazima 161
Sci. Pap. I. P. C. R. **39** (1941), 28-40

18. Note on the Lifetime of the Neutral Meson ...... Yasutaka Tanikawa 174
Proc. Phys.-Math. Soc. Japan **24** (1942), 610-612

19. Pri la Ondoekvacio de Korpuskloj kun Entjerplusduona Spino .... Hidehiko Tamaki 177
Sci. Pap. I. P. C. R. **40** (1942), 1-10

20. Pri la al Duastufa Undoro Operaciendaj Operatoroj .. Hidehiko Tamaki 187
Sci. Pap. I. P. C. R. **40** (1942), 11-20

21. Bemerkungen über die Natur des Mesotrons .... Hideki Yukawa 197
ZS. f. Phys. **119** (1942), 201-205

22. On the Correlations between Mesons and Yukawa Particles .... Shoichi Sakata & Takesi Inoue 203
Prog. Theor. Phys. **1** (1946), 143-148

23. On the Cosmic Ray Meson and the Nuclear Meson .. Yasutaka Tanikawa 211
Prog. Theor. Phys. **2** (1947), 220-221

24. On the Temperature Effect of Underground Cosmic Radiation .... Tatuoki Miyazima 212
Prog. Theor. Phys. **3** (1948), 99-100

25. Cosmic Ray Underground .... Satio Hayakawa 213
Prog. Theor. Phys. **3** (1948), 199-200

26. Note on the Two Meson Hypothesis .... Satio Hayakawa 214
Prog. Theor. Phys. **3** (1948), 200-202

27. On the Correlation between Yukawa Particle and Meson .... Takesi Inoue & Shuzo Ogawa 217
Prog. Theor. Phys. **3** (1948), 319-320

28. On the Neutral Meson .... Mituo Taketani 219
Prog. Theor. Phys. **3** (1948), 349-355

29. On the mu-Meson Capture ....
.... Mituo Taketani, Muneo Sasaki & Seitaro Nakamura 226
Prog. Theor. Phys. **4** (1949), 552-556

30. Remarks on the Nuclear Disintegration by Meson Capture ....
........Yoichi Fujimoto, Satio Hayakawa & Yoshio Yamaguchi 231
Prog. Theor. Phys. **4** (1949), 575-576

31. Nuclear Disintegration by π-Meson Capture ....
........Yoichi Fujimoto, Satio Hayakawa & Yoshio Yamaguchi 232
Prog. Theor. Phys. **4** (1949), 576-577

32. On the Two-Meson Theory ....
Mituo Taketani, Seitaro Nakamura, Ken-ichi Ono & Muneo Sasaki 234
Phys. Rev. **76** (1949), 60-63

33. Models and Methods in the Meson Theory ....Hideki Yukawa 238
Rev. Mod. Phys. **21** (1949), 474-487

34. Analysis on the Two Meson Theory ....Seitaro Nakamura,
Hiroshi Fukuda, Ken-ichi Ono, Muneo Sasaki & Mituo Taketani 244
Prog. Theor. Phys. **5** (1950), 740-747

Supplement No. 2 1955

Collected Papers on Meson Theory. II

Introduction ....Hideki Yukawa

1. Zur Theorie des Mesotrons. I...................Sin-itiro Tomonaga 1
Sci. Pap. I. P. C. R. **39** (1941), 247-266

2. Zur Theorie des Mesotrons. II ....
....................Tatuoki Miyazima & Sin-itiro Tomonaga 21
Sci. Pap. I. P. C. R. **40** (1942), 21-67

3. Bemerkung über die Streuung der Mesotronen am Kernteilchen .....
....Sin-itiro Tomonaga 68
Sci. Pap. I. P. C. R. **40** (1942), 73-86

4. On the Mesotron Theory of Nuclear Forces ....
....................Tatuoki Miyazima & Sin-itiro Tomonaga 82
Sci. Pap. I. P. C. R. **40** (1943), 274-310

5. On the Effect of the Field Reactions on the Interaction of Mesotrons
and Nuclear Particles ....Sin-itiro Tomonaga 119
  - I. Prog. Theor. Phys. **1** (1946), 83-101 119
  - II. ibid. **1** (1946), 109-124 138
  - III. ibid. **2** (1947), 6-24 154
  - IV. ibid. **2** (1947), 63-70 173

6. On Wentzel's Method in the Meson Theory .... Tatuoki Miyazima, Takao Tati & Sin-itiro Tomonaga 181
Prog. Theor. Phys. **3** (1948), 26-37

7. Scattering Problem in the Intermediate-Coupling Theory. I .... Ziro Maki, Masatomo Sato & Sin-itiro Tomonaga 193
Prog. Theor. Phys. **9** (1953), 607-632

Supplement No. 3 1956

Meson Theory. III

Introduction .... Mituo Taketani
Part I. Development of Pion Theory of Nuclear Foces .... Junji Iwadare, Shoichiro Otsuki, Ryozo Tamagaki, Shigeru Machida, Toshiyuki Toyoda & Wataro Watari 13
Part II. Verification of Pion Theory of Nuclear Forces .. Junji Iwadare, Shoichiro Otsuki, Ryozo Tamagaki & Wataro Watari 32
Part III. Construction of Nuclear Potential from Pion Theory .... Shigeru Machida & Toshiyuki Toyoda 106
Part IV. Definition of Nuclear Potential .... Kazuhiko Nishijima 138
Part V. On the Method of the Theory of Nuclear Forces .... Mituo Taketani, Seitaro Nakamura & Muneo Sasaki 169

Supplement No. 4 1957

Relativistic Hydrodynamics of the Dirac Matter ..... Takehiko Takabayasi 1
Part I. General Theory ....

Supplement No. 5 1958

Anomalous Magnetic Moment of the Nucleon .... Eiji Yamada 1
Pion Theory of the Anomalous Magnetic Moment of the Nucleon .... Hiroichi Hasegawa 17
Phenomenological Theory of Pion-Nucleon Reactions .... Satio Hayakawa, Masaaki Kawaguchi, & Shigeo Minami 41

A New Mathematical Formulation of Quantum Mechanics in the Framework of Wave-Packet Theory ——*Transformation Theory, Theory of Scattering and Functional Differentiation* —— .... Mikio Namiki & Riichi Iino 65

Errata:

Verification of Pion Theory of Ntclear Forces (No. 3, p. 32) .... J. Iwadare. S. Otsuki, R. Tamagaki & W. Watari 123

Supplement No. 6 1958

Origin of Cosmic Rays ....Satio Hayakawa, Kensai Ito & Yoshinosuke Terashima 1
The Lateral and the Angular Structure Functions of Electron Showers ... .Koichi Kamata & Jun Nishimura 93

Supplement No. 7 1958

Theory of Scatterings and Reactions ....Yoshio Yamaguchi 1
Conservation Laws in the Isotopic Spin and Their Violation by the Electromagnetic Interaction.............Masaaki Kato & Gyo Tekeda 35
On the Structure of Interactions ....Hiroomi Umezawa 67

Supplement No. 8 1958

Hypothetical Velocity Measurements of a Dirac Particle ....Ziro Koba 1
Some Feasible Tests of Quantum Electrodynamics at Small Distances ....Steven C. Frautschi 21
Nuclear Moments and Configuration Mixing ....Hiroshi Noya, Akito Arima & Hisashi Horie 33

SUBJECT INDEX

Vols. 1 thru 20

Sup. Nos. 1 thru 8

CLASSIFICATION

01 Mathematical Method 99
02 Mechanics, General and Quantum 102
03 Relativity, Gravitation 106
04 Field Theory, General 109
05 Quantum Electrodynamics 126
06 Meson Theory 136
07 Elementary Particle Interactions 142
08 Electromagnetic Theory and Electron Theory 151
09 Hydrodynamics 152

11 μ-Mesons 152
12 π-Mesons, General (see also Meson Theory) 155
13 π-Mesons, Reactions 159
14 Electromagnetic Properties of Nucleons 167
15 Nuclear Forces and Deuteron Problems, Meson Theoretical 169
16 Heavy Mesons and Hyperons (see also Elementary Particle Interaction) .. 175

31 Nuclear Forces and Deuteron Problems, Pnenomenological (see also Nuclear Forces and Deuteron Problems, Meson Theoretical) 180
32 Nuclear Spin and Moments 183
33 Nuclear Structure 184
34 Nuclear Reactions 187
35 Beta Decays 193
36 Astrophysics 197
37 Nuclear Spectroscopy (see also Nuclear Spin and Moment, Nuclear Structure) 198

41 Cosmic Radiation 198

61 Atomic Structure and Spectrum 205
62 Molecular Structure and Spectrum 206
63 Electron Theory of Solids 209

64 Magnetic Properties of Matter 213
65 Electrical Properties of Matter 217
66 Optical Properties of Matter 219
67 Resonance and Relaxation in Solids and Liquids........ 219
68 Mechanical Properties (Elasticity and Plasticity) 221

71 Statistical Mechanics and Thermodynamics........ 222
72 Phase Transition 226
73 Low Temperature Physics........ 228

81 Miscellaneous 232

SUBJECT INDEX

01 Mathematical Method

Unified Theory of Recurrence Formulas. I ... Teturo Inui **3** (1948), 168

On the Higher Approximation of Born's Method in the Theory of Atomic Collision (A) ...... M. Nogami & N. Shôno **3** (1948), 215

Unified Theory of Recurrence Formulas. II ... Teturo Inui **3** (1948), 244

Examples in which the Perturbation Method fails (L) .... T. Kato **3** (1948), 313

On the Born's Successive Approximation in the Theory of Atomic Collision .... Mokichiro Nogami **3** (1948), 356

On the Admissible Wave Functions (L) .... K. Kodaira & T. Kato **3** (1948), 439

On the Hermitian Condition (L) .... G. Araki **3** (1948), 446

An Improvement on the Integrations appearing in Perturbation Theory (L) .... H. Umezawa & R. Kawabe **4** (1949), 367

Domain of Kinetic Energy and Perturbation Theory (L) .... G. Araki **4** (1949), 379

An Improvement of the Integrations appearing in Perturbation Theory .... Hiroomi Umezawa & Rokuo Kawabe **4** (1949), 420

On the Convergence of the Perturbation Method. I .... Tosio Kato **4** (1949), 514

Spinors in Five Dimension .... Ken-iti Gotô **5** (1950), 42

On the Convergence of the Perturbation Method. II—1 .... Tosio Kato **5** (1950), 95

On the Convergence of the Perturbation Method. II—2 .... Tosio Kato **5** (1950), 207

On the Relativistically Improved Integration in Perturbation Theory ——*Its Meaning in Feynman Theory*—— .... Hiroomi Umezawa & Rokuo Kawabe **5** (1950), 266

Gauge-Spin Transformations and Wave Equations .... Giiti Iwata **5** (1950), 983

01 Mathematical Method *(continued)*

Non-Hermitian Operators and Eigenfunction Expansions...Giiti Iwata **6** (1951), 216

Note on Schwinger's Variational Method......Tosio Kato **6** (1951), 295

Upper and Lower Bounds of Scattering Phases...Tosio Kato **6** (1951), 394

Transformation Functions in the Complex Domain...Giiti Iwata **6** (1951), 524

On the Path Integral and Its Application..Yasuhisa Murai **6** (1951), 762

On the So-called Pseudo-Spinors ....Ken-iti Gotô **6** (1951), 990

Wave Equations in de Sitter Space (L) ....K. Gotô **6** (1951), 1013

The Unitary Transformation and the Quantization...Giiti Iwata **7** (1952), 39

Group Theoretical Aspects in S-Matrix Theory (L)...............D. Ito, H. Tanaka, Y. Watanabe & M. Yamazaki **7** (1952), 128

Orthogonal Functions in the Complex Domain ..Giiti Iwata **7** (1952), 333

On the Density Matrix in Hartree-Field. I....Hiroshi Itô **7** (1952), 406

Operator Calculus of Quantized Operator..Izuru Fujiwara **7** (1952), 433

Operator Calculus in Quantized Field Theory...Kazuo Yamazaki **7** (1952), 449

Realization of Special Contact Transformations with Static Electromagnetic Fields in Vacuo. I...........Giiti Iwata **8** (1952), 183

Linear Meson Wave Equation in de Sitter Space (L)...S. A. Raje **8** (1952), 384

On the Meson Wave Equation in de Sitter Space (L)...K. Gotô **8** (1952), 672
(*cf.* Errata: Vol. 9, p. 326)

Realization of Special Contact Transformations with Static Electromagnetic Fields in Vacuo. II...........Giiti Iwata **9** (1953), 97

On the Group of Transformations in Six-Dimensional Space. I.................................Yasuhisa Murai **9** (1953), 147
(*cf.* Errata: Vol. 9, p. 326)

On the Evaluation of the Operator Function log($e^y e^z$) (L)...I. Fujiwara **9** (1953), 676

01 **Mathematical Method** *(continued)*

Perturbation Theory of Relativistic Eigenvalue Problem (L) .... N. Mugibayashi & M. Namiki **10** (1953), 108

On the Duffin-Kemmer Algebra .... Izuru Fujiwara **10** (1953), 589

Convergence of Iterative Methods .... Takashi Kikuta **10** (1953), 653

Invariant Delta Functions in the Sence of Distributions .... Takehito Takahashi **11** (1954), 1

Generalized Racah Coefficient and Its Applications .... Akito Arima, Hisashi Horie & Yukito Tanabe **11** (1954), 143

On the Group of Transformations in Six-Dimensional Space. II —— *Conformal Group in Physics* —— .... Yasuhisa Murai **11** (1954), 441

Two Simple Stochastic Models of Cascade Multiplication .... Alladi Ramakrishnan & S. K. Srinivasan **11** (1954), 595

Superstationary Variational Method .... Takashi Kikuta **12** (1954), 10

Upper and Lower Bounds of Born Approximation. I .... Takashi Kikuta **12** (1954), 225

Upper and Lower Bounds of Born Approximation. II .... Takashi Kikuta **12** (1954), 234

Point Transformation and its Application .... Shinzô Nakai **13** (1955), 380

General Formula of the Racah Coefficient .... Masachiyo Sato **13** (1955), 405

Clebsch-Gordan Coefficients for $j_2=5/2$ .... Reiko Saito & Masato Morita **13** (1955), 540

On the Extension of the Casimir Trick. I —— *On the Definition of Density Matrix and Its Reduction* —— .... Tsuneyuki Kotani **14** (1955), 379

Extensions of Variational Methods. I —— *Super-Stationary Variational Method* —— .... Takashi Kikuta **14** (1955), 457

Tables of U Coefficients .... Hiroyuki Matsunobu & Hisao Takebe **14** (1955), 589

Extensions of Variational Methods. II —— *Two Parameter Eigenvalue Problem for the Deuteron State* —— .... Takashi Kikuta **15** (1956), 50

Extensions of Variational Methods. III —— *Determination of Potential from Phase Shift Function* —— .. Takashi Ohmura **16** (1956), 231

01 Mathematical Method *(continued)*

Separable Dynamical Systems of Staeckel in Flat Space .... Giiti Iwata **19** (1958), 369

Perfect Imaging Dynamical Systems .... Giiti Iwata **19** (1958), 375

On the Representations of Field Quantities .. Hitoshi Wakita **20** (1958), 35

On a Non-Adiabatic Approximate Method in the Non-Linear Interaction Theory (L) .... S. Ozaki **20** (1958), 239

The Clebsch-Gordan Coefficients .... S. D. Majumdar **20** (1958), 798

02 Mechanics, General and Quantum

On the Generalized Transformation Functions .... Yasutaka Tanikawa **1** (1946), 12
(*cf.* Errata: Vol. 1, p. 150)

On Dirac's General Transformation Function. I .... Satosi Watanabe **2** (1947), 71

On the Analogy between Born's Electrostatic Field and Compressible Flow (A) .... I. Imai **2** (1947), 97

On the Canonical Transformation in Quantum Theory .... Ryoyu Utiyama **2** (1947), 117

Singularity at the Origin of Schrödinger Eigenfunction in the Coulomb Field (L) .... G. Araki **3** (1948), 97

A Note on the Dirac Space .... Satosi Watanabe **3** (1948), 160

On the Transformation of Spin Functions (L) .. H. Narumi **3** (1948), 202

On Dirac's General Transformation Function. II-(a) .... Satosi Watanabe **3** (1948), 378

On the Quantization of the Dissipative System (L) .... E. Kanai **3** (1948), 440

On the Expectation Value (L) .... G. Araki **3** (1948), 448

On Dirac's General Transformation Function. II-(b) .... Satosi Watanabe **4** (1949), 1

On the Dirac's Indefinite Metric Space .... Naomi Shôno & Nobuo Oda **4** (1949), 358
(*cf.* Errata: Vol. 4, p. 581)

On an Approximate Solution of the Many Body Problem of Fermi-Dirac Particles .... Mokichiro Nogami **5** (1950), 65

02 Mechanics, General and Quantum *(continued)*

On the Spur Calculations in Quantum Mechanics (L) ....K. Nishijima **5** (1950), 155

Remarks on Bloch's Method of Sound Waves applied to Many-Fermion Problems ....Sin-itiro Tomonaga **5** (1950), 544

An Algebraic Theory of the Density Matrix. I. ....Kodi Husimi & Toshiyuki Nishiyama **5** (1950), 909

On the Plasma-like Oscillation (L).........T. Nishiyama **6** (1951), 1025

The Unitary Transformation and the Quantization...Giiti Iwata **7** (1952), 39

On Lagrangian and Hamiltonian Formalism...Yoichiro Nambu **7** (1952), 131

On the Analytic Behavior of Dyson Transformation Function ....Hiroshi Suura, Yoichi Mimura & Toshiei Kimura **7** (1952), 171

On the Velocity Operator in Quantum Mechanics (L)...T. Nishiyama **7** (1952), 417

On the New Description of Quantum-Mechanics (L)..H. Shimooda **7** (1952), 597

On the Formulation of Quantum Mechanics associated with Classical Pictures...................Takehiko Takabayasi **8** (1952), 143

Comparison of Born and Heitler Expansions in a Scattering Problem (L)..N. Fukuda, T. Kobayashi, Z. Maki & M. Sato **8** (1952), 261

Generalization of Analytical Spin (L) ......T. Yamamoto **8** (1852), 570

A Quantum Theory of Boson Assemblies. I ....Toshiyuki Nishiyama **8** (1952), 655

An Algebraic Treatment of the Many-Electron Problem ....Huzio Nakano **9** (1953), 33

A Note on Many Particle Problems (L) ....T. Sasakawa **9** (1953), 182

Remarks on the Formulation of Quantum Mechanics with Classical Pictures and on Relations between Linear Scalar Fields and Hydrodynamical Fields ......Takehiko Takabayasi **9** (1953), 187

Miscellanea in Elementary Quantum Mechanics. I...Kodi Husimi **9** (1953), 238

02 Mechanics, General and Quantum *(continued)*

A Quantum Theory of Boson Assemblies. II —*A Classical Approach to Many-Boson Problems*— .... Toshiyuki Nishiyama **9** (1953), 245

Comments on Article of Takabayasi concerning the Formulation of Quantum Mechanics with Classical Pictures........ David Bohm **9** (1953), 273

Miscellanea in Elementary Quantum Mechanics. II........ Kodi Husimi **9** (1953), 381

A Non-Local Wave Equation and Its Connection with the Dirac Particle (L) .... T. Takabayasi **9** (1953), 557

On the Separability of Dirac Equation (L) .. T. Takabayasi **9** (1953), 681

'Quantum Condition' in the Phase-Space Representation of Quantum Mechanics (L) .... T. Takabayasi **10** (1953), 119

Equivalence between the Formulation of Quantum Mechanics in terms of Quantum Potential and the One in terms of Markoff-like Process (L) .... T. Takabayasi **10** (1953), 121

Subsidiary Conditions in the Phase-Space Representation of Quantum Mechanics (L) .... T. Takabayasi **10** (1953), 122

Miscellanea in Elementary Quantum Mechanics. III........ Kodi Husimi & Masuhiko Otuka **10** (1953), 173

Analysis of the Structure of Transformation Function in Quantum Mechanics........ Smio Tani **11** (1954), 190

On an Expression for the Total Cross Section .. L. I. Schiff **11** (1954), 288

A Note on the Generalized Statistics (L)........ F. Ferrari & C. Villi **11** (1954), 328

The Formulation of Quantum Mechanics in terms of Ensemble in Phase Space........ Takehiko Takabayasi **11** (1954), 341

Conservation Laws in Classical and Quantum Physics........ Eugene P. Wigner **11** (1954), 437

On the Hydrodynamical Representation of Non-Relativistic Spinor Equation (L)........ T. Takabayasi **12** (1954), 810

On Products of Quantities as Distributions (L) .. K. Gotô **13** (1955), 112

Elementary Theory of Quantum-Mechanical Collective Motion of Particles. I........ Sin-itiro Tomonaga **13** (1955), 467

02 Mechanics, General and Quantum *(continued)*

Elementary Theory of Quantum-Mechanical Collective Motion of Particles. II..................Sin-itiro Tomonaga **13** (1955), 482

Theory of Sound Waves and Collective Description..Toshiyuki Nishiyama **14** (1955), 37

The Formal Theory of Scattering....Sigenobu Sunakawa **14** (1955), 175

The Energy-Levels and Transition Probabilities for a Bounded Linear Harmonic Oscillator.....J. S. Baijal & K. K. Singh **14** (1955), 214

The Vector Representation of Spinning Particle in the Quantum Theory. I ....Takehiko Takabayasi **14** (1955), 283

Variation Principle in Relativistic Hydrodynamics (L)...Z. Koba **14** (1955), 488

Partial Description of Quantum-Mechanical System...Gentaro Araki **16** (1956), 197

State Vectors in the Collective Description (L)...T. Nishiyama **16** (1956), 244

Constraint in a Quantum System (L) ......Y. Watanabe **16** (1956), 534

The Functional Integrals in Quantum Theory.........................Takeshi Kanki, Koichi Murata & Sigenobu Sunakawa **17** (1957), 7

Note on the Isotopic Spin of the Antiparticle...Shinzô Nakai **17** (1957), 139

Low's Scattering Equation and S-Matrix...Hideo Fukutome **17** (1957), 383

Cluster Development Method in the Quantum Mechanics of Many Particle System. I...Fumiaki Iwamoto & Masami Yamada **17** (1957), 543

Description of Pauli Matter as a Continuous Assembly of Small Rotating Bodies..Takehiko Takabayasi & Jean Pierre Vigier **18** (1957), 573

Ground State Energy of Bose System with Lennard-Jones Potential (L)...............................Ryuzo Abe **19** (1958), 350

On the Collective Mode of Internal Motion of the Nucleus to be coupled with the Irrotational Surface Motion.................S. Nagata, R. Tamagaki, S. Amai & T. Marumori **19** (1958), 495

02 Mechanics, General and Quantum *(continued)*

On a Non-Adiabatic Approximate Method in the Non-Linear Interaction Theory (L) .... S. Ozaki **20** (1958), 239

Equivalent Hamiltonian of an Electron Gas High Density (L) .... T. Nishiyama **20** (1958), 245

An Illustrative Example of the Nuclear Collective Motion (L) .... F. Iwamoto **20** (1958), 776

Theory of Unstable Particles in the Wave-Packet-Formalism .... Kunio Yamamoto **20** (1958), 857

Quantum Theory in Pseudo-Hilbert Space .... Gaku Konisi & Takesi Ogimoto **20** (1958), 868

Pri la Ondoekvacio de Korpuskloj kun Entjerplusduona Spino .... Hidehiko Tamaki **Sup. 1** (1955), 177

Pri la Duastufa Uudoro Operaciendaj Operatoroj .... Hidehiko Tamaki **Sup. 1** (1955), 187

Theory of Scatterings and Reactions .... Yoshio Yamaguchi **Sup. 7** (1958), 1

Hypothetical Velocity Measurements of a Dirac Particle .... Ziro Koba **Sup. 8** (1958), 1

03 Relativity, Gravitation

On the Interaction of Mesons with the Gravitational Field. I .... Ryoyu Utiyama **2** (1947), 38

On the Interaction of Mesons with the Gravitational Field. II .... Ryoyu Utiyama **3** (1948), 14

Combination of the Unified Field with the Corpuscular Field (A) .... G. Iwata **3** (1948), 207

On a Pair of Reciprocal de Sitter Spaces (L) .... S. Watanabe **3** (1948), 450

Linearization of Minkowski Space and Five-Dimensional Space (L) .... K. Imaeda **5** (1950), 133

Relativity of Representation Coordinates and Its Consequences .... Giiti Iwata **6** (1951), 684

03 Relativity, Gravitation *(continued)*

On Solutions of New Field Equations of Einstein and Those of Schroedinger...Hyôitirô Takeno, Mineo Ikeda & Shingo Abe **6** (1951), 837

Wave Equations in de Sitter Space (L).........K. Gotô **6** (1951), 1013

On the Approximate Solutions of the Unified Field Theory of Einstein and Schrödinger (L)...........M. Ikeda **7** (1952), 127

On Relativistic Theory of Rotating Disk .... Hyôitirô Takeno **7** (1952), 367

On Equivalent Observers. I....... Yoshio Ueno & Hyôitirô Takeno **8** (1952), 291

On the Spherically Symmetric Space-Times in General Relativity... ....Hyôitirô Takeno **8** (1952), 317

Note on Invariancy of Some Fundamental Equations of Physics (L) .... M. Ikeda **8** (1952), 382

Linear Meson Wave Equation in de Sitter Space (L)............ ....S. A. Raje **8** (1952), 384

On the Meson Wave Equation in de Sitter Space (L)............ .... K. Gotô **8** (1952), 672

(*cf.* Errata: Vol. 9, p. 326)

On the Equivalency for Observers in the Special Theory of Relativity ....Yoshio Ueno **9** (1953), 74

A Generalization of Special Lorentz Transformation in de Sitter Space-Time.....................Hyôitirô Takeno **10** (1953), 431

On the Wave Theory of Light in General Relativity. I ――*Path of Light*――........................Yoshio Ueno **10** (1953), 442

On a Five Dimensional Representation of the Electromagnetic and Electron Field Equations in a Curved Space-Time.......... ....Mineo Ikeda **10** (1953), 483

Static Spherically Symmetric Space-Times in General Relativity.... .... Hyôitirô Takeno **10** (1953), 509

The Problem of Many-Bodies and the Superposition of Spherically Symmetric Space-Times in General Relativity............. .... Hyôitirô Takeno **11** (1954), 392

03 Relativity, Gravitation *(continued)*

The General Theory of Relativity and the Expanding Universe (L) .... S. Bhattacharya **11** (1954), 613

On Static Solutions of Einstein's Generalized Theory of Gravitation. I................................Mineo Ikeda **12** (1954), 17

On Equivalent Observers. II............Hyôitirô Takeno **12** (1954), 129

Wave Fields in de Sitter Space............Ken-iti Gotô **12** (1954), 311

Relativistic Wave Equations under the Inhomogeneous Lorentz Group ....Ken-iti Gotô **12** (1954), 409

On the Wave Theory of Light in General Relativity. II —*Light as the Electromagnetic Wave*— ....Yoshio Ueno **12** (1954), 461

On Static Solutions of Einstein's Generalized Theory of Gravitation. II................................Mineo Ikeda **13** (1955), 265

On the Solution of Γ's for a Type of Non-Symmetric Tensor Field $g_{\mu\nu}$................................N. N. Ghosh **13** (1955), 587

On Boundary Conditions in the Non-Symmetric Unified Theory .... Mineo Ikeda **15** (1956), 1

On the Wave Theory of Light in General Relativity. III —*Electromagnetic Four Potential*— ....Hyôitirô Takeno & Yoshio Ueno **15** (1956), 322

On the Quantum Field Theory of the Interaction between the Graviton and the Matter Field. I .... Toshiei Kimura **16** (1956), 157

On a Solution of Field Equations in Einstein's Unified Field Theory. I................................ N. N. Ghosh **16** (1956), 421

On an Extended Framework for the Description of Elementary Particles..............Mineo Ikeda & Yoshihiko Miyachi **16** (1956), 537

On the Quantum Field Theory of the Interaction between the Graviton and the Matter Field. II —*Formulation without the Coordinate Condition*— ....Toshiei Kimura **16** (1956), 555

On a Solution of Field Equations in Einstein's Unified Field Theory. II................................N. N. Ghosh **17** (1957), 131

On Einstein's Relativistic Theory of the Non-Symmetric Field...... ....Mineo Ikeda **18** (1957), 154

03 Relativity, Gravitation *(continued)*

The Artificial Satellite and the Relativistic Red Shift (L)........ ....A. Das **18** (1957), 554

A Covariant Interpretation of the Existence of the Parity Non-Conservation and the New Freedoms for Elementary Particles... ....Ken-iti Gotô **19** (1958), 592

A Comparison of Plane Wave Solutions in General Relativity with Those in Non-Symmetric Theory...Hyôitirô Takeno **20** (1958), 267

Perturbational Calculations of Propagators of the Elementary Particles interacting with the Gravitational Field ....Yoshio Miyatake **20** (1958), 476

On the Tests of Gravitational Theories in terms of an Artificial Satellite..........Hidekazu Nariai & Yoshio Ueno **20** (1958), 703

04 Field Theory, General

On the Generalized Transformation Functions.................. ....Yasutaka Tanikawa **1** (1946), 12
(*cf.* Errata: Vol. 1, p. 150)

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. I ....Sin-itiro Tomonaga **1** (1946), 27

Some Remarks on Bopp's Field Theory ....Eizô Kanai & Shuji Takagi **1** (1946), 43

A Note on the Method of Radiation Damping and Its Application to the Photomesonic Process.. ....Minoru Kobayasi & Kuninosuke Imaeda **1** (1946), 102

On the Interaction of Mesons with the Gravitational Field. I...... .... Ryoyu Utiyama **2** (1947), 38

On Dirac's General Transformation Function. I ....Satosi Watanabe **2** (1947), 71

Interaction of Elementary Particles ——*Mixed Theory of Nuclear Fields*——(A) ....Y. Tanikawa, M. Hirano & M. Tatsuoka **2** (1947), 93

On the Exclusion Principle of the Assembly of the Systems of Bose Particles with Negative Energy (A)..Y. Tanikawa **2** (1947), 93

04 Field Theory, General *(continued)*

On the Self-Energy of the Bose Particles (A) .... Y. Tanikawa 2 (1947), 94

On the Interaction of Elementary Particles. II (A) .... T. Miyazima 2 (1947), 94

On the Meaning of the Interaction. II (A) .... H. Suzuki 2 (1947), 96

On the Hamiltonian Form of the General Field Equations (A) .... K. Husimi 2 (1947), 97

On the Energy-Momentum Tensor (A) .... G. Araki 2 (1947), 97

A Note on the Dirac Space (A) .... S. Watanabe 2 (1947), 98

An Attempt at the Theory of Elementary Particles (A) .... H. Yukawa 2 (1947), 98

On the λ-Limiting Process (A) .... R. Utiyama 2 (1947), 98

On the Non-Infinitesimal Commutation Relations (A) .... E. Kanai 2 (1947), 98

Super-Many-Time Formulation of the Quantum Theory of Wave Fields (A) .... S. Tomonaga 2 (1947), 100

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. II ——*Case of Interacting Electromagnetic and Electron Fields* .... Ziro Koba, Takao Tati & Sin-itiro Tomonaga 2 (1947), 101

On the Canonical Transformation in Quantum Theory .... Ryoyu Utiyama 2 (1947), 117

Some Remarks on the Non-Infinitesimal Commutation Relations .... Eizô Kanai 2 (1947), 135

Conflict between Matter and Field ——*An Analysis of the Difficulties of the Theory of Elementary Particles*—— .... Mituo Taketani 2 (1947), 187

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. III——*Case of Interacting Electromagnetic and Electron Fields*—— .... Ziro Koba, Takao Tati & Sin-itiro Tomonaga 2 (1947), 198

On the Theory of Elementary Particles. I .. Hideki Yukawa 2 (1947), 209

The Supplementary Note to the Generalized Transformation Function (L) .... Y. Tanikawa 2 (1947), 219

04 Field Theory, General *(continued)*

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. IV ——*Case of Interacting Electromagnetic and Meson Fields*—— .... Suteo Kanesawa & Sin-itiro Tomonaga 3 (1948), 1

On the Quantum Theory of Radiation Damping and the Lifetime of the Meson .... Yasutaka Tanikawa 3 (1948), 38

Note on Tanikawa's Theory of Damping (L) .. H. Enatsu 3 (1948), 96

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. V ——*Case of Interacting Electromagnetic and Meson Fields*—— .... Suteo Kanesawa & Sin-itiro Tomonaga 3 (1948), 101

On the Interaction of the Meson and Nucleon Field in the Super-Many-Time Theory .... Yonezi Miyamoto 3 (1948), 124

Auxiliary Condition and Gauge Transformation in the "Super-Many-Time Theory." I. .... Ziro Koba, Yasuharu Ôisi & Muneo Sasaki 3 (1948), 141

A Note on the Dirac Space .... Satosi Watanabe 3 (1948), 160

Reciprocity in Generalized Field Theory (L) .. H. Yukawa 3 (1948), 205

The Unified Field Theory combined with the Quantum Theory (A) .... G. Iwata 3 (1948), 207

On a Relativistically Invariant Quantization of the First Order Wave Equations (A) .... S. Kanesawa 3 (1948), 210

On the Theory of the Radiation Damping (A) .... Y. Tanikawa 3 (1948), 213

Auxiliary Condition and Gauge Transformation in the "Super-Many-Time Theory." II. .... Ziro Koba, Yasuharu Ôisi & Muneo Sasaki 3 (1948), 229

Reactive Corrections for the Elastic Scattering of an Electron (L) .... S. Endo, T. Kinoshita & Z. Koba 3 (1948), 320
(*cf.* Errata: Vol. 4, p. 100 L)

On Dirac's General Transformation Function. II (a) .... Satosi Watanabe 3 (1948), 378

A Self-Consistent Subtraction Method in the Quantum Field Theory. I .... Takao Tati & Sin-itiro Tomonaga 3 (1948), 391

04 **Field Theory, General** *(continued)*

On the Relativistic Formulation of the Perturbation Theory (L)... ....Y. Nambu **3** (1948), 444

Possible Types of Nonlocalizable Fields (L)..H. Yukawa **3** (1948), 452
(*cf.* Errata: Vol. 4, p. 102)

The Self-Consistent Subtracion Method and Heitler's Integral Equation (L)..........................T. Miyazima **3** (1948), 455

On Dirac's General Transformation Function. II–(b)............... ....Satosi Watanabe **4** (1949), 1

Theory of the Interaction of Elementary Particles. IV_1 —*The Problem of Vacuum Polarization* (1)—................ ...Hiroomi Umezawa, Jiro Yukawa & Eiji Yamada **4** (1949), 25

A Self-Consistent Subtraction in the Quantum Field Theory. II..... ....Hiroshi Fukuda, Yonezi Miyamoto & Sin-itiro Tomonaga **4** (1949), 47

Second Configuration Space and Third Quantization (L).......... ....Y. Nambu **4** (1949), 96

Reactive Corrections for the Elastic Scattering of an Electron (L) ....S. Endo, T. Kinoshita & Z. Koba **4** (1949), 100
(*Errata for* Vol. 3, p. 320)

Theory of the Interaction of Elementary Particles. IV_2 — *The Problem of Vacuum Polarization* (2) —................ ...Hiroomi Umezawa, Jiro Yukawa & Eiji Yamada **4** (1949), 113

Note on the Formal Solution of the Tomonaga-Schwinger Equation.. ....Smio Tani **4** (1949), 209

Note on the Interaction Representation in case of Meson Field interacting with Electromagnetic Field (L).................. ....S. Kanesawa **4** (1949), 236

Note on the Relativistic Formulation of Belinfante's Transformation (L)..................Y. Katayama & S. Takagi **4** (1949), 240

Theory of the Interaction of Elementary Particles. V—*The Problem of Vacuum Polarization* (3)—....................... ....Hiroomi Umezawa & Eiji Yamada **4** (1949), 251

A Remark on Relativistically Invariant Formulation of the Quantum Field Theory........Suteo Kanesawa & Ziro Koba **4** (1949), 297

04 **Field Theory, General** *(continued)*

Semi-Classical Treatment of the Reactive Corrections. I——*The Anomalous Magnetic Moment of the Electron*—— .... Ziro Koba 4 (1949), 319

On the Method of the Third Quantization. I........ Yoichiro Nambu 4 (1949), 331

An Improvement on the Integrations appearing in Perturbation Theory (L)........ H. Umezawa & R. Kawabe 4 (1949), 367

Vacuum Polarization due to Various Charged Particles (L)........ H. Umezawa & R. Kawabe 4 (1949), 369

An Attempt to Pauli's Regulator (L)........ Y. Katayama 4 (1949), 372
(*cf.* Errata: Vol. 4, p. 581)

A Divergence-Free Field Theory (L)........ K. Sawada 4 (1949), 374

On the *C*-Meson Theory (L).. Y. Katayama & K. Sawada 4 (1949), 377

On the Electron-Positron Pair Disintegration of the Neutral Meson (L)........ H. Fukuda & Y. Miyamoto 4 (1949), 391

Note on the Wave-Equation in the Non-Localizable System (L)........ H. Suzuki 4 (1949), 394

On the Method of the Third Quantization. II........ Yoichiro Nambu 4 (1949), 399

A Divergence Free Field Theory........ Katuro Sawada 4 (1949), 412

An Improvement of the Integrations appearing in Perturbation Theory........ Hiroomi Umezawa & Rokuo Kawabe 4 (1949), 420

Some General Formulae relating to Vacuum Polarization........ Hiroomi Umezawa & Rokuo Kawabe 4 (1949), 423

Vacuum Polarization due to Various Charged Particles........ Hiroomi Umezawa & Rokuo Kawabe 4 (1949), 443

On the Reaction of Radiation Field........ Muneo Sasaki & Ryoji Suzuki 4 (1949), 485

Remarks on the Ambiguity in Quantum Field Theory (L)........ Y. Katayama & S. Hori 4 (1949), 565

Quantum Theory of Generalized Local Fields (L)........ S. Kanesawa 5 (1950), 157

On the Integrability Condition in the "Super-Many-Time Theory"........ Kazuhiko Nishijima 5 (1950), 187

04 Field Theory, General *(continued)*

Note on the Elimination of the Normal-Dependent Part from the Hamiltonian (L) .... K. Nishijima **5** (1950), 331

On the Elimination of the Normal-Dependent Part from the Hamiltonian .... Kazuhiko Nishijima **5** (1950), 405

On the Covariant Formalism of the Quantum Theory of Fields. I .... Ryoyu Utiyama **5** (1950), 437

Structure of Electron in λ-Process (L) .... K. Sawada **5** (1950), 497

Some Remarks on the Relativistic Quantum Field Theory (L) .... T Nagakura **5** (1950), 502

On the Connection between Spin and Statistics .... Wolfgang Pauli **5** (1950), 526

On Some Developments in Non-Local Field Theory .... Claude Bloch **5** (1950), 606

Force Potentials in Quantum Field Theory .... Yoichiro Nambu **5** (1950), 614

A New Interpretation of the Negative Energy Bose Field .... Yasutaka Tanikawa **5** (1950), 692

Note on a Lorentz-Invariant Integration in the Quantum Field Theory .... Ziro Koba **5** (1950), 696

Remarks on the Field Theory .... Tatuoki Miyazima **5** (1950), 735

On the Generalized Transformation Function and the Integrability Condition .... Kazuhiko Nishijima **5** (1950), 813

On the D-Function of Non-Local Fields (L) .... Y. Ôno & M. Sugawara **5** (1950), 902

Ambiguities in Quantized Field Theories .... Hiroshi Fukuda & Tôichirô Kinoshita **5** (1950), 1024

Notes on Dirac's New Quantization Method in the Field Theory .... Toshinosuke Muto & Kenzo Inoue **5** (1950), 1033
(*cf.* Errata: Vol. 6, p. 445)

On Yukawa's Theory of Non-Local Field (L) .... O. Hara & H. Shimazu **5** (1950), 1055

Note on the Eigenvalue Problem in the Quantum Field Theory .... Kazuhiko Nishijima **6** (1951), 37

On the Covariant Formalism of the Quantum Theory of Fields. II .... Ryoyu Utiyama **6** (1951), 65

04 **Field Theory, General** *(continued)*

Some Remarks on the Non-Local Field Theory (L) .... Z. Tokuoka & Y. Katayama **6** (1951), 132

On the Difference between Local and Non-Local Fields (L) .... H. Yukawa **6** (1951), 133

Note on the Direct Interaction between Spinor Fields .... Susumu Kamefuchi **6** (1951), 175

Behavior of D-Function in Yukawa's Non-Local Field Theory .... Yôrô Ôno & Masao Sugawara **6** (1951), 182

"Integro-Kaŭzeco" en Konverĝa Kvantumteorio de Kampoj .... F. J. Belinfante **6** (1951), 202

Connection between Particle Models and Field Theories. I——*The Case Spin* 1/2—— .... Smio Tani **6** (1951), 267

Note on Belinfante's New Theory (L) .... K. Husimi & R. Utiyama **6** (1951), 432

On the Self-Energies of Nucleons (L) .... H. Enatsu **6** (1951), 434

Note on the "Champ Soustractif" of Louis de Broglie (L) .... S. Endo & H. Kanazawa **6** (1951), 436

Note on Some Calculations in Quantum Field Theory (L) .... S. T. Epstein **6** (1951), 441

Note on Some Type of Interaction (L) .... K. Sawada **6** (1951), 637

β-Matrix Formalism as $\kappa\to 0$ (L) .... D. C. Peaslee **6** (1951), 639

On the Self-Energies of Nucleons .... Hiroshi Enatsu **6** (1951), 643

Relativistic Two-Body Problem in Quantum Theory .... Kiyoshi Sakuma, Naomi Shôno & Tadashi Ouchi **6** (1951), 748

On the Path Integral and Its Application .. Yasuhisa Murai **6** (1951), 762

S-Matrix and Nucleon Isobar (L) .... S. Kamefuchi, H. Nakai & R. Kawabe **6** (1951), 891

On the Energy-Momentum Tensor of Bopp-Type Non-Local Fields (L) .... Y. Ôno **6** (1951), 898

Pri la Koncepto de la Libera Kampo (L) .... S. Hori **6** (1951), 903

On the Energy-Momentum Tensor of Bopp-Type Non-Local Field .... Yôrô Ôno **6** (1951), 925

"Infrared Catastrophe"-like Divergency in Meson Decay Process (L) .... D. Ito **6** (1951), 1020

04 Field Theory, General *(continued)*

On the Divergence of the Transition Probability due to Energy Conservation in Intermediate States (L)…….D. Ito 6 (1951), 1023

Group Theoretical Aspects in *S*-Matrix Theory (L)…………… ..D. Ito, H. Tanaka, Y. Watanabe & M. Yamazaki 7 (1952), 128

On Lagrangian and Hamiltonian Formalism……………………………………………………Yoichiro Nambu 7 (1952), 131

On the Analytic Behavior of Dyson Transformation Function…… ..Hiroshi Suura, Yoichi Mimura & Toshiei Kimura 7 (1952), 171

Theory of Super-Quantization of Quantized Field and its Applications …………………………Yasutaka Tanikawa 7 (1952), 193

Relativistic Two-Body Problem……………Hideji Kita 7 (1952), 217

On Yukawa's Theory of Non-Local Field. I——*The Case of Free Field*——……….Osamu Hara & Haruo Shimazu 7 (1952), 255

The Mass Variation with Velocity in Bopp's Unitary Field Theory. I ……………………………Masao Sugawara 7 (1952), 303

"Weisskopf-Wigner Method" in *S*-Matrix Formalism (L)………. ……………………………………D. Ito 7 (1952), 326

The General Discussion of the Self-Stress (L)………………… …………………Y. Takahashi & H. Umezawa 7 (1952), 330

On the Structure of the Interaction of the Elementary Particles. I ——*The Renormalizability of the Interactions*——……… ….Shoichi Sakata, Hiroomi Umezawa & Susumu Kamefuchi 7 (1952), 377

Operator Calculus in Quantized Field Theory………………… ……………………………Kazuo Yamazaki 7 (1952), 449

On a Relativistic Integral Equation for Bound States…………… ………..Chushiro Hayashi & Yasuo Munakata 7 (1952), 481
(*cf.* Errata: Vol. 8, p. 142)

On the Structure of the Interactions of the Elementary Particles. II ——*Does the Interaction of the Second Kind eixist in the Nature?*——………………Hiroomi Umezawa 7 (1952), 551

The Mass Variation with Velocity in the Bopp's Unitary Field Theory. II………….Masao Sugawara & Sakae Minami 7 (1952), 563

04 **Field Theory, General** (*continued*)

On the Well-ordered S-Matrix.............Shoichi Hori 7 (1952), 578
(*cf.* Errata: Vol. 8, p. 142
On the Equivalence Principle (L)..T. Dodo & R. Utiyama 7 (1952), 589
Note on the Non-Local Interaction............................
.....................Naomi Shôno & Nobuo Oda 8 (1952), 28
Non-Local Theory of Nucleon-Meson Field (L)..N. Shôno 8 (1952), 133
On the Self-Stress........Yasushi Takahashi & Hiroomi Umezawa
8 (1952), 193
Some Consequences of Gauge Invariance......................
....Masaaki Kawaguchi & Nobumichi Mugibayashi 8 (1952), 212
A Note on the S-Matrix in the Theory of the Non-Local Interaction
(L)..............................T. Ouchi 8 (1952), 253
Isotopic Spin of Nucleons and Leptons and Anti-Particle Coordinate
(L)................T. Hamada & M. Sugawara 8 (1952), 256
Analytical Representation of Spin (L).....T. Yamamoto 8 (1952), 258
Non-Local Field and Non-Local Interaction (L)..................
.................................Y. Katayama 8 (1952), 381
On Yukawa's Theory of Non-Local Field (L)....................
.........................H. Shimazu & O. Hara 8 (1952), 385
On Lagrangian Formalism..........Kazuhiko Nishijima 8 (1952), 401
On the Interaction Representation (L)........................
.... Y. Takahashi & H. Umezawa 8 (1952), 493
Principle of Detailed Balance in Quantum Field Theory (L).......
...................................K. Gotô 8 (1952), 565
(*cf.* Errata: Vol. 9, p. 326)
On the Convergence of the S-Matrix Series (L)..S. Hori 8 (1952), 569
On the Corpuscular Aspect of Quantum Theory of Field (L)......
........................M. Namiki & Y. Suzuki 8 (1952), 572
A Note on the Gauge Transformation in the Theory of Non-Local
Interaction of the Field (L).........................
.... S. Ozaki, S. Nagata & Y. Okamura 8 (1952), 574
On the Structure of the Interactions of the Elementary Particles.
III——*On the Renormalizable Field Theory*——...........
.........Susumu Kamefuchi & Hiroomi Umezawa 8 (1952), 579

04 Field Theory, General *(continued)*

On the Equivalence of the Particle Formalism and the Wave Formalism of Meson. I...Zensuke Tokuoka & Hajime Tanaka **8** (1952), 599

The Equation of Motion of a Spinning Particle in a Meson Field (L) ....R. C. Majumdar, S. P. Pandya & S. Gupta **8** (1952), 670

On the Interaction of the Second Kind (L) ....S. Kamefuchi & H. Umezawa **8** (1952), 675

The General Theory of the Interaction Representation. I——*The Local Field*—— ....Yasushi Takahashi & Hiroomi Umezawa **9** (1953), 14

New Description of Field (L)...............Y. Takano **9** (1953), 86

On Yukawa's Theory of Non-Local Fields. II——*The Interaction of Non-Local Fields*——...Osamu Hara & Haruo Shimazu **9** (1953), 137

Difficulty of Divergence of the Perturbation Method in the Quantum Theory of Field (L)...R. Utiyama & T. Imamura **9** (1953), 181

On the Relativistic Two-Body Problem (L)......S. Hori **9** (1953), 184

Difficulty of Divergence of the Perturbation Method in the Quantum Field Theory..Ryoyu Utiyama & Tsutomu Imamura **9** (1953), 431

The General Theory of the Interaction Representation. II ——*General Fields and Interactions*——..Hiroomi Umezawa & Yasushi Takahashi **9** (1953), 501

On the Structure of the Interaction of the Elementary Particles. IV ——*On the Interaction of the Second Kind*——....................Susumu Kamefuchi & Hiroomi Umezawa **9** (1953), 529

The Theory of the Structure of Elementary Particles (L).................................O. Hara & T. Marumori **9** (1953), 559

The Theory of the Interactions with Higher Derivatives (L)..Y. Katayama **9** (1953), 561

On the Convergence of the Perturbation Method in the Quantum Field Theory...................Ryoyu Utiyama **9** (1953), 593

On the Quantum Theory of Fields.....Dominique Rivier **9** (1953), 633

04 Field Theory, General *(continued)*

Theory of the Interactions with Higher Derivatives and Its Application to the Non-Local Interaction...Yasuhisa Katayama **10** (1953), 31

New Description of Field——*Classical Field*——(L).......................................Y. Takano & I. Suzuki **10** (1953), 110

On the Conservation of Heavy Particles (L)....................O. Hara, T. Marumori, Y. Ohnuki & H. Shimodaira **10** (1953), 114

On the Constants of Motion for the Case of Non-Localized Interactions..................................Yôrô Ôno **10** (1953), 125

On the Equivalence of the Particle Formalism and the Wave Formalism of Meson. II ——*Case of Interacting Meson and Nucleon Fields*—— ....Zensuke Tokuoka **10** (1953), 137

On the Solution of the Equation of Motion (L) ..H. Kita **10** (1953), 231

On the Heisenberg Treatment of the Field Variables...Ichie Watanabe **10** (1953), 371

On the Universal Fermi Interaction (L)........................O. Hara, T. Marumori, Y. Ohnuki & H. Shimodaira **10** (1953), 470

On the Radiation Damping and the Decay of an Excited State (L) ....M. Namiki & N. Mugibayashi **10** (1953), 474

On the Fundamental Equation for the Nucleon..Takao Okabayashi **10** (1953), 499

Hamiltonian Formalism in Non-Local Field Theories.. Chushiro Hayashi **10** (1953), 533

Many-Body Problem in Quantum Field Theory. I..Kazuhiko Nishijima **10** (1953), 549

On the Inverse Power Expansion of the $S_{vac}[\eta^*, \eta, J]$ and the Green-Functions (L)..........................S. Hori **10** (1953), 575

The Photon Self-Energy Problem and Microscopic Space-Time Structure (L)............................T. Kimura **10** (1953), 577

Analytical Representation of General Spin (L)...T. Yamamoto **10** (1953), 579

On the Transition Matrix and the Green Function in the Quantum Field Theory....Sho Tanaka & Hiroomi Umezawa **10** (1953), 617

04 Field Theory, General *(continued)*

Non-Perturbation Approach Method by Edwards (L) .... S. Okubo **10** (1953), 692

On the Relation between Non-Local Urmaterie Field and Irreducible Local Field (L) .... Y. Ohnuki & O. Hara **10** (1953), 697

Some Remarks on the Mass Spectrum and Non-Local Interaction (L) .... H. Goto **10** (1953), 698

Note on the Second Kind Interaction ..... Susumu Okubo **11** (1954), 80

Mass Spectrum of Elementary Particles. I ——*Eigenvalue Problem in Space-Time*—— .... Hiroshi Enatsu **11** (1954), 125

Bound States and *S*-Matrix in Quantum Field Theory .... Shinzô Nakai **11** (1954), 179

On Field Equations with Non-Local Interaction (L) .... C. Hayashi **11** (1954), 226

On Gauge Invariance and the Structure of Elementary Particles .... Yasushi Takahashi **11** (1954), 251

On the Structure of the Interaction of the Elementary Particles. V ——*Interaction of the Second Kind and Non-Local Interaction*—— .... Susumu Kamefuchi **11** (1954), 273

On the Construction of *S*-Matrix in Lagrangian Formalism .... Tsutomu Imamura, Sigenobu Sunakawa & Ryoyu Utiyama **11** (1954), 291

The Generalization of Stueckelberg Formalism in the Theory of Quantized Field .... Minoru Hamaguchi **11** (1954), 461

Composite States of Two Fermions through Fermi-Type Interaction (L) .... H. Katsumori **11** (1954), 505

A Formulation of Field Theory in Hilbert Space .... Giiti Iwata **11** (1954), 537

A Remark on the Infinities due to the New Complex Poles of Modified Propagators (L) .... R. Utiyama & T. Imamura **11** (1954), 606

On a Treatment of Many-Particle Systems in Quantum Field Theory .... Hiroshi Suura **12** (1954), 49

Some Remarks on the Charge Conjugation ... Sho Tanaka **12** (1954) 72

On the Construction of Potential in Field Theory .... Nobuyuki Fukuda, Katuro Sawada & Mituo Taketani **12** (1954), 156

04 **Field Theory, General** (*continued*)

An Attempt to the Unified Description of Elementary Particles.....
............Osamu Hara, Toshio Marumori, Yoshio Ohnuki
& Hajime Shimodaira **12** (1954), 177

Wave Equations with New Degree of Freedom..................
.................................Ken-iti Gotô **12** (1954), 208

Many-Body Problem in Quantum Field Theory. II...............
...........................Kazuhiko Nishijima **12** (1954), 279

Mass Spectrum of Elementary Particles. II....................
..............................Hiroshi Enatsu **12** (1954), 363

On the Time Reversal in the Quantized Field Theory...........
Hiroomi Umezawa, Susumu Kamefuchi & Sho Tanaka **12** (1954), 383

Potential in Quantum Field Theory (L).....T. Imamura **12** (1954), 402

On Some Notes on the So-called G. Feldman's Modified Propagator
(L)..............................Y. Miyatake **12** (1954), 551

Diagonalization of Hamiltonian and Tamm-Dancoff Equation........
...............................Susumu Okubo **12** (1954), 603

Velocity-Dependent Potential and Gauge Invariance of the First
Kind (L)..........................C. H. Chang **12** (1954), 696
(*cf.* Errata: Vol. 13, p. 340)

On the Meaning of the Solution to the One-Body Dirac Equation..
..................Smio Tani & Kazuo Yamazaki **12** (1954), 723

Kinematical Investigation of the *S*-Matrix.........................
.... Masaaki Kawaguchi **12** (1954), 758

A Remark on Convergence Factor (L)...........N. Ito **12** (1954), 809

On the Equivalence Theorem (L).........Y. Takahashi **13** (1955), 105

On the Structure of Dirac Wave Function (L)...................
.................................T. Takabayasi **13** (1955), 106

Wave Equations in Conformal Space ——*Wave Equation for Nucleon*——(L)......................Y. Murai **13** (1955), 109

An Example of Five-Dimensional Field (L)..T. Yamamoto **13** (1955), 217

On the Consistency of the Quantum Field Theory based on the
Renormalization Hypothesis (L).....T. Yoshimura **13** (1955), 220

Relativistic Hydrodynamics equivalent to the Dirac Equation (L)...
.... T. Takabayasi **13** (1955), 222

04 Field Theory, General *(continued)*

Many-Body Problem in Quantum Field Theory. III...Kazuhiko Nishijima **13** (1955), 305

On the Jauch Field (L)......S. Kamefuchi & S. Tanaka **13** (1955), 334

A Remark on the Interaction of the Second Kind (L)..T. Yoshimura **13** (1955), 336

Note on the Bound State Problem (L)....T. Okabayashi **13** (1955), 338

Point Transformation and Its Application...Shinzô Nakai **13** (1955), 380

Some Remarks on Lee's Model in Renormalizable Field Theory (L)..................................Y. Munakata **13** (1955), 455

The Relation between Jordan's Non-Localized Theory and Pais-Uhlenbeck's Theory (L).............Y. Miyatake **13** (1955), 458

Adiabatic Process and the Stationary State...Hajime Tanaka **13** (1955), 497

On the Theories of Higher Derivative and Non-Local Couplings. I...................................Tosiya Taniuti **13** (1955), 505

Products of Improper Operators and the Renormalization Problem of Quantum Field Theory..........Werner Güttinger **13** (1955), 612

On the Wave Equation for Spin 1 in Hamiltonian Form (L)..I. Fujiwara **14** (1955), 166

Note on the Lehmann's Modified Propagators (L).....................................K. Hiida & M. Sawamura **14** (1955), 167

On the Mass Reversal in the Quantized Field Theory (L)....................T. Ouchi, K. Senba & M. Yonezawa **14** (1955), 172

Solutions of a Bethe-Salpeter Equation for Scattering States...............................Kazuhiko Nishijima **14** (1955), 203

On the Jauch Field...Susumu Kamefuchi & Sho Tanaka **14** (1955), 225

Some Remarks on the Applicability of the Field Theory from the Standpoint of the Distribution Analysis (L)...H. Wakita **14** (1955), 260

Relativistic Wave Equations with Maximum Spin Two............Toshihiko Tsuneto, Tetu Hirosige & Izuru Fujiwara **14** (1955), 267

Note on the Non-Perturbation-Approach to Quantum Field Theory (L).....................T. Goto & T. Imamura **14** (1955), 396

04 Field Theory, General *(continued)*

An Exactly Soluble Example in Quantum Field Theory (L)...... .... S. Machida **14** (1955), 407

The Self-Energy of the Scalar Nucleon......Koichi Mano **14** (1955), 435

Scattering Matrix in the Heisenberg Representation for a System with Bound States.................Abraham Klein **14** (1955), 580

On Boundary Conditions in the Non-Symmetric Unified Field Theory .... Mineo Ikeda **15** (1956), 1

On the Theories of Higher Derivative and Non-Local Couplings. II.. .... Tosiya Taniuti **15** (1956), 19

Mass Reversal and Space-Time Inversions (L)................... .... S. Watanabe **15** (1956), 81

Remarks on Heisenberg's Non-Linear Field Theory (L)........... ....H. Kita **15** (1956), 83

On a Regular Formulation of Quantum Field Theory. I——*Non Relativistic Theory*——.............Ken-iti Gotô **15** (1956) 167

On the Renormalization Theory of Quantum Electrodynamics (L)... ....S. Kamefuchi & H. Umezawa **15** (1956), 298

A Relativistic Field Theory of an Extended Particle. I ....Tadao Nakano **15** (1956), 333

Some Relations between the Bound State Problem and Scattering Theory (L) ....N. Fukuda **15** (1956), 414

On the Renormalization Cut-off (L).................. H. Umezawa, S. Kamefuchi, Y. Tomozawa & M. Konuma **15** (1956), 417

Theory of Mass Reversal in the Quantized Field Theory ....Tadashi Ouchi, Kei Senba & Minoru Yonezawa **15** (1956), 431

Symmetry in Time and Tanikawa's Method of Superquantization in regard to Negative Energy Fields..Satosi Watanabe **15** (1956), 523

On the Quantum Field Theory of the Interaction between the Graviton and the Matter Field.... Toshiei Kimura **16** (1956), 157

A Relativistic Wave Equation for a Particle with Two Mass States of Spin 1 and 0..................Haruo Shimazu **16** (1956), 287

On the Bethe-Salpeter Equation for the Scalar-Spinor Particle System (L)...........R. Sugano & Y. Munakata **16** (1956), 532

04 **Field Theory, General** (*continued*)

On an Extended Framework for the Description of Elemenary Particles..........Mineo Ikeda & Yoshihiko Miyachi **16** (1956), 537

On the Quantum Field Theory of the Interaction between the Graviton and the Matter Field. II ——*Formulation without the Coordinate Conditon*............Toshiei Kimura **16** (1956), 555

A New Formulation on the Electromagnetic Field (L)... T. Ohmura **16** (1956), 684

(*cf.* Errata: Vol. 17, p. 129

Stability of the Electron (L)...............T. Ohmura **16** (1956), 685

The Functional Integrals in Quantum Theory.......Takeshi Kanki, Koichi Murata & Sigenobu Sunakawa **17** (1957), 7

A Method of Renormalization for Unstable Particles.............................Takao Okabayashi & Shigeo Sato **17** (1957), 30

On the Bethe-Salpeter Equation and the Excited States of the Hydrogen Atom.........Hideji Kita & Masami Wakano **17** (1957), 63

General Integral Formula of Perturbation Term in the Quantized Field Theory ....Noboru Nakanishi **17** (1957), 401

Quantum Field Theory of Unstable Particles......................Huzihiro Araki, Yasuo Munakata, Masaaki Kawaguchi & Tetsuo Goto **17** (1957), 419

(*cf.* Errata: Vol. 18, p. 101)

On the Wave Propagation in the Non-Linear Fields...Tosiya Taniuti **17** (1957), 461

Selection Rule imposed by Mass Reversal..Tadashi Ouchi **17** (1957), 743

On the Asymptotic Conditions in Quantum Field Theory..................................Kazuhiko Nishijima **17** (1957), 765

(*cf.* Addenda: Vol. 18, p. 101)

An Attempt of Generalizing the Invariance of the Theory under the Charge Conjugation (L)...O. Hara, Y. Fujii & Y. Ohnuki **17** (1957), 819

Criticism on the Assumptions in the Formal Scattering Theory.................................Tsutomu Imamura **18** (1957), 51

Covariant Solutions of the Bethe-Salpeter Equation.......................................H. S. Green & S. N. Biswas **18** (1957), 121

04 Field Theory, General *(continued)*

On the Theory of the Unstable Particle in Lee's Model .... Kunio Naito **18** (1957), 200

A Theory of Elementary Particles .... Takao Tati **18** (1957), 235

On the Cut-off Theory in Quantum Field Theory (L) .... S. Aramaki **18** (1957), 320

Dispersion Relations in Nucleon-Nucleon Scattering (L) .... S. Matsuyama & H. Miyazawa **18** (1957), 328

Some Considerations on the High-Energy Electron-Proton Scattering and the Nucleon Mass Difference .... Kichiro Hiida & Makoto Sawamura **18** (1957), 451

Pion-Nucleon Scattering and the Structure of the Pion .... Shigeru Machida **18** (1957), 467

Analysis of Neutron-Electron Interaction in the Relativistic Perturbation Theory .... Kin-ichi Ishida **18** (1957), 493

A New Approach to a Bound State ... Tsutomu Imamura **18** (1957), 559

On the Theory of the Unstable Particle. II ... Kunio Naito **18** (1957), 614

An Attempt at Reformulating Pion-Nucleon Interaction. I ——*Introduction of K-Space*—— .... Osamu Hara, Yasunori Fujii & Yoshio Ohnuki **19** (1958), 129

General Theory of Infrared Divergence .. Noboru Nakanishi **19** (1958), 159

Quantum Electrodynamics with the Indefinite Metric——*Non-Lorentz-Invariance of the Gupta Formalism*—— .... Sigenobu Sunakawa **19** (1958), 221

An Attempt of Nonlinear Field Theory (L) ...... H. Kita **19** (1958), 454

A Theory of Clothed Unstable Particles .. Noboru Nakanishi **19** (1958), 607

General Solution of the Bethe-Salpeter Equation in Instantaneous Interaction Approximation .... S. N. Biswas **19** (1958), 725

On the Representations of Field Quantities .... Hitoshi Wakita **20** (1958), 35

On the Concept of Potential in Quantum Field Theory .... Abraham Klein **20** (1958), 257

On the Consistency between the P-Wave Dispersion Relation and the Experiment (L) ..... T. Tsuchida & A. Kanazawa **20** (1958), 395

04 Field Theory, General *(continued)*

Relativistic Wave Equations with Maximum Spin Two........... .... Toshihiko Tsuneto & Izuru Fujiwara **20** (1958), 439

Perturbational Calculations of Propagators of the Elementary Particles interacting with the Gravitational Field.................... ....Yoshio Miyatake **20** (1958), 476

Effect of the Non-Relativistic Recoil of a Source Particle in Quantum Field Theories...Jun'ichi Osada & Haruyuki Fujino **20** (1958), 487

On the Wave Propagation in the Non-Linear Fields. II............ ....Tosiya Taniuti **20** (1958), 529

Dispersion Relations and Vertex Properties in Perturbation Theory.. ....K. Symanzik **20** (1958), 690

A Theory of Clothed Unstable Particles. II..................... ....Noboru Nakanishi **20** (1958), 822

Theory of Unstable Particles in the Wave-Packet-Formalism........ ....Kunio Yamamoto **20** (1958), 857

Quantum Theory in Pseudo-Hilbert Space....................... ....Gaku Konisi & Takesi Ogimoto **20** (1958), 868

Some Remarks on the Scattering Problem (L)....M. Ida **20** (1958), 979

Pri la Ondoekvacio de Korpuskloj kun Entjerplusduona Spino...... ....Hidehiko Tamaki **Sup. 1** (1955), 177

Pri la Duastufa Undoro Operaciendaj Operatoroj.................. ....Hidehiko Tamaki **Sup. 1** (1955), 187

Relativistic Hydrodynamics of the Dirac Matter ....Takehiko Takabayasi **Sup. 4** (1957), 1

A New Mathematical Formulation of Quantum Mechanics in the Framework of Wave-Packet Theory —— *Transformation Theory, Theory of Scattering and Functional Differentiation*——........Mikio Namiki & Riichi Iino **Sup. 5** (1958), 65

On the Structure of Interactions... Hiroomi Umezawa **Sup. 7** (1958), 67

05 Quantum Electrodynamics

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Field. I.............Sin-itiro Tomonaga **1** (1946), 27

05 Quantum Electrodynamics *(continued)*

The Self-Energy of the Electron and the Mass Difference of Nucleons (L) ....S. Sakata & O. Hara **2** (1947), 30

On the Elimination of the Auxiliary Condition in the Quantum Electrodynamics (A) ....S. Hayakawa, Y. Miyamoto & S. Tomonaga **2** (1947), 95

Correlation between Mutual Interactions of Elementary Particles (A) ....S. Sakata **2** (1947), 99

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. II.. ......Ziro Koba, Takao Tati & Sin-itiro Tomonaga **2** (1947), 101

The Theory of the Interaction of Elementary Particles. I.......... ....Shoichi Sakata **2** (1947), 145

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. III——*Case of Interacting Electromagnetic and Electron Fields*——.............................. .....Ziro Koba, Takao Tati & Sin-itiro Tomonaga **2** (1947), 198

Correction due to the Reaction of "Cohesive Force Field" for the Elastic Scattering of an Electron (L).................... ....D. Ito, Z. Koba & S. Tomonaga **2** (1947), 216

(*cf.* Errata: Vol. 2, p. 217 L)

Errata to the above Letter (L)................................ ....D. Ito, Z. Koba & S. Tomonaga **2** (1947), 217

Application of the "Self-Consistent" Subtraction Method to the Elastic Scattering of an Electron (L)......................... ....Z. Koba & S. Tomonaga **2** (1947); 218

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. IV——*Case of Interacting Electromagnetic and Meson Fields*——............................ ....Suteo Kanesawa & Sin-itiro Tomonaga **3** (1948), 1

Note on the Collision Energy Loss of Fast Charged Particle...... ....Kugao Nakabayasi **3** (1948), 82

On the Infrared Catastrophe in the Problem of Electron Scattering (L) ....T. Sebe **3** (1948), 95

05 Quantum Electrodynamics *(continued)*

Radiative Corrections for Compton Scattering (L) .... Z. Koba & G. Takeda 3 (1948), 98

On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. V ——*Case of Interacting Electromagnetic and Meson Fields*—— .... Suteo Kanesawa & Sin-itiro Tomonaga 3 (1948), 101

Auxiliary Condition and Gauge Transformation in the "Super-Many-Time Theory." I .... Ziro Koba, Yasuharu Ôisi & Muneo Sasaki 3 (1948), 141

The Theory of Interaction of Elementary Particles. II——*The Electromagnetic Self-Energy of the Elementary Particles*—— .... Osamu Hara 3 (1948), 188
(*cf.* Errata: Vol. 3, p. 323)

Radiative Corrections in e^2 for an Arbitrary Process involving Electrons, Positrons and Light Quanta (L) .... Z. Koba & G. Takeda 3 (1948), 203

On the Level Shift of Hydrogen Atom (A) .... K. Ono & Y. Nambu 3 (1948), 207

Infrared Catastrophe and Field Reaction in General Processes of Quantum Electrodynamics (A) .... Z. Koba 3 (1948), 208

On the Level-Shift due to Radiation Reaction (A) .... T. Tati & S. Tomonaga 3 (1948), 211

Corrections due to Reactions of "Cohesive Force Field" to Elastic Scattering of an Electron (A) .... Z. Koba, D. Ito & S. Tomonaga 3 (1948), 211

On the Electromagnetic Self Energy of a Moving Electron (A) .... Y. Tanikawa & O. Hara 3 (1948), 213

On the Negative Energy Photon (A) .... K. Sawada 3 (1948). 214

Auxiliary Condition and Gauge Transformation in the "Super-Many-Time Theory." II .... Ziro Koba, Yasuharu Ôisi & Muneo Sasaki 3 (1948), 229

Corrections due to the Reaction of "Cohesive Force Field" to the Elastic Scattering of an Electron. I .... Daisuke Ito, Ziro Koba & Sin-itiro Tomonaga 3 (1948), 276

On Radiation Reactions in Collision Processes. I .... Ziro Koba & Sin-itiro Tomonaga 3 (1948), 290

On the Infrared Catastrophe in the Problem of Electron Scattering .... Takasi Sebe 3 (1948), 304

05 Quantum Electrodynamics (*continued*)

The Electromagnetic Shift of Energy Levels (L) .... O. Hara & T. Tokano **3** (1948), 316

The Problem of Vacuum Polarization (L) .... H. Umezawa, J. Yukawa & E. Yamada **3** (1948), 317
(*to be continued to* Vol. 3, p. 456 L)

Reactive Corrections for the Elastic Scattering of an Electron (L) .... S. Endo, T. Kinoshita & Z. Koba **3** (1948), 320
(*cf.* Errata: Vol. 4, p. 100 L)

Corrections due to the Reaction of "Cohesive Force Field" to the Scattering of an Electron. II .... Daisuke Ito, Ziro Koba & Sin-itiro Tomonaga **3** (1948), 325

A Self-Consistent Subtraction Method in the Quantum Field Theory. I .... Takao Tati & Sin-itiro Tomonaga **3** (1948), 391

On Radiation Reaction in Collision Processes. II——*Radiative Corrections for Compton Scattering*—— .... Ziro Koba & Gyo Takeda **3** (1948), 407

The Problem of Vacuum Polarization (L) .... H. Umezawa & E. Yamada **3** (1948), 456
(*continued from* Vol. 3, p. 317 L)

Theory of the Interaction of Elementary Particles. IV_1——*The Problem of Vacuum Polarization* (1)—— .... Hiroomi Umezawa, Jiro Yukawa & Eiji Yamada **4** (1949), 25
(*cf.* Errata: Vol. 4, p. 242)

A Self-Consistent Subtraction Method in the Quantum Field Theory. II_1 .. Hiroshi Fukuda, Yonezi Miyamoto & Sin-itiro Tomonaga **4** (1949), 47

On Radiation Reaction in Collision Processes. III_1——*First Radiative Correction for an Arbitrary Process including Electrons, Positrons and Light Quanta*—— .... Ziro Koba & Gyo Takeda **4** (1949), 60

Notes on the Self-Energy Problems .... Katuro Sawada, Shuji Takagi & Minoru Kobayasi **4** (1949), 71

The Level Shift and the Anomalous Magnetic Moment of the Electron .... Yoichiro Nambu **4** (1949), 82

Semi-Classical Derivation of the Anomalous Magnetic Moment of the Electron (L) .... Z. Koba **4** (1949), 98

05 Quantum Electrodynamics *(continued)*

Effect of the C-Meson Field on the Anomalous Magnetic Moment of the Electron (L) . . . Z. Koba, Y. Nambu & S. Tani 4 (1949), 99
(*cf* Errata: Vol. 4, p. 242)

Reactive Corrections for Elastic Scattering of an Electron (L) . . . . S. Endo, T. Kinoshita & Z. Koba 4 (1949), 100
(Errata for Vol. 3, p. 320)

On the Energy Level Shifts of Atoms due to the Interaction between the Electron and the Electromagnetic Field . . . . Osamu Hara & Takasi Tokano 4 (1949), 103

Theory of the Interaction of Elementary Particles. IV$_2$ —*The Problem of Vacuum Polarization* (2)— . . . . Hiroomi Umezawa, Jiro Yukawa & Eiji Yamada 4 (1949), 113

A Self-Consistent Subtraction Method in the Quantum Field Theory. II$_2$ . . Hiroshi Fukuda, Yonezi Miyamoto & Sin-itiro Tomonaga 4 (1949), 121

On Radiation Reaction in Collision Processes. III$_2$—*First Radiative Correction for an Arbitrary Process including Electrons, Positrons and Light Quanta*— . . . . Ziro Koba & Gyo Takeda 4 (1949), 130

Pri la Kalkulado de Elektromagnetaj Fenomenoj per Kampo de Neutraj Vektormezonoj kun Neglektebla Maso . . . . F. J. Belinfante 4 (1949), 165

Note on the Formal Solution of the Tomonaga-Schwinger Equation . . . . Smio Tani 4 (1949), 209

Reactive Corrections for the Elastic Scattering of an Electron . . . . Shinji Endo, Tôichirô Kinoshita & Ziro Koba 4 (1949), 218

On the γ-Decay of Neutral Meson (L) . . . . H. Fukuda & Y. Miyamoto 4 (1949), 235

Theory of the Interaction of Elementary Particles. V —*The Problem of Vacuum Polarization* (3)— . . . . Hiroomi Umezawa & Eiji Yamada 4 (1949), 251

Note on the Finite Extension of Electron . . Katuro Sawada 4 (1949), 275

Semi-Classical Treatment of the Reactive Corrections. I —*The Anomalous Magnetic Moment of the Electron*— . . . . Ziro Koba 4 (1949), 319

05 **Quantum Electrodynamics** (*continued*)

On the γ-Decay of Neutral Meson..Hiroshi Fukuda & Yoneji Miyamoto 4 (1949), 347

General Formulae appearing in the Problem of the Vacuum Polarization (L) ....H. Umezawa & R. Kawabe 4 (1949), 368

Vacuum Polarization due to Various Charged Particles (L)..............................H. Umezawa & R. Kawabe 4 (1949), 369

The Self-Energy of a Dirac Particle and Its Relativistic Covariance (L)..................R. Kawabe & H. Umezawa 4 (1949), 370

On the Gauge-Difficulty in the γ-Decay of the Neutal Scalar Meson (L).......................D. Ito & T. Miyazima 4 (1949), 380

External Vacuum Polarization (L)..............Z. Koba 4 (1949), 382

Application of Pauil's Regulator to the γ-Decay of Neutrettos (L).......H. Fukuda, Y. Miyamoto, T. Miyazima & S. Tomonaga 4 (1949), 385

Some General Formulae relating to Vacuum Polarization.......................Hiroomi Umezawa & Rokuo Kawabe 4 (1949), 423

Vacuum Polarization due to Various Charged Particles..........................Hiroomi Umezawa & Rokuo Kawabe 4 (1949), 443

The Self-Energy of a Dirac Particle and Its Relativistic Covariance ....Rokuo Kawabe & Hiroomi Umezawa 4 (1949), 461

Applicability of Pauli's Regulator to the γ-Decay of Neutrettos...........H. Fukuda, Y. Miyamoto, T. Miyazima, S. Tomonaga, S. Oneda, S. Ozaki & S. Sasaki 4 (1949), 477

A Note on the Self-Energy and Self-Stress (L)..K. Sawada 4 (1949), 568

Note on the Vacuum Polarization (L).........G. Takeda 4 (1949), 573

Five Dimensional Approach to Regularized Quantum Electrodynamics Yasuhisa Katayama, Katuro Sawada & Shuji Takagi 5 (1950), 14

The Use of the Proper Time in Quantum Electrodynamics. I...................................Yoichiro Nambu 5 (1950), 82

Note on the Self-Energy and Self-Stress. I..Katuro Sawada 5 (1950), 117

On the Integrability Condition of Tomonaga-Schwinger Equation (L) ....Z. Koba 5 (1950), 139

A Remark on the Problem of Gauge-Invariancy (L) ....H. Umezawa & R. Kawabe 5 (1950), 153

05 Quantum Electrodynamics *(continued)*

Note on the Self-Energy and Self-Stress. II . . Katuro Sawada **5** (1950), 236

Problems of Ambiguity in Quantum Field Theory . . . . Yasuhisa Katayama **5** (1950), 272

Relativistic Covariance in the Quantum Electrodynamics (L) . . . . . . J. Yukawa, N. Oda & H. Umezawa **5** (1950), 320

Note on Five-Dimensional Space and the Self-Energy of Electron (L) . . . . . . Y. Katayama & S. Takagi **5** (1950), 336

On Mixed Field Theory and Vacuum Polarization (L) . . . . S. Kanesawa **5** (1950), 492

The Reversal of Time and the Quantization of the Longitudinal Field in Quantum Electrodynamics . . . . K. Bleuler & W. Heitler **5** (1950), 600

Canonical Theory of Quantum Electrodynamics . . . . Kodi Husimi & Ryoyu Utiyama **5** (1950), 718

On the Problem of Gauge-Invariancy and Divergence in the Theory of Elementary Particles. I . . . . Hiroomi Umezawa & Rokuo Kawabe **5** (1950), 769

The Covariant Theory of Radiation Damping. I——*General Formalism*—— Nobuyuki Fukuda & Tatuoki Miyazima **5** (1950), 849

On the Positron Theory of Vacuum (L) . . . . Y. Katayama **5** (1950), 906

Note on the Infrared Catastrophe (L) . . . . . . T. Kinoshita **5** (1950), 1045
(*cf.* Errata: Vol. 6, p. 134)

Note on the Energy-Momentum Tensor (L) . . Y. Katayama **5** (1950), 1054

On the Problem of Covariance in Quantum Electrodynamics. I . . . . Jiro Yukawa & Hiroomi Umezawa **6** (1951), 112

On the Problem of Covariance in Quantum Electrodynamics. II . . . . Jiro Yukawa & Hiroomi Umezawa **6** (1951), 197

On the Čerenkov Radiation . . . . Tosiya Taniuti **6** (1951), 207

On the Mass of Cohesive Meson and the Mass Difference of Nucleons (L) . . . . H. Enatsu & P. Y. Pac **6** (1951), 261

On the Positron Theory of Vacuum . . . Yasuhisa Katayama **6** (1951), 309

On Gauge Invariance and Equivalence Theorems . . . . Ziro Koba, Nobumichi Mugibayashi & Shinzô Nakai **6** (1951), 322

05 Quantum Electrodynamics (*continued*)

On the Mass of Cohesive Meson and the Mass Difference of Nucleons.
II (L) ....H. Enatsu & P. Y. Pac 6 (1951), 435

The Vacuum in Quantum Electrodynamics.......................
.........Hiroomi Umezawa & Susumu Kamefuchi 6 (1951), 543

Note on the Longitudinal and Scalar Photons.......Ryoyu Utiyama,
Tsutomu Imamura, Sigenobu Sunakawa & Tarô Dodo 6 (1951), 587

On the Interaction of Cohesive Field (L).....K. Sawada 6 (1951), 626

On the Mass Difference of Nucleons and the Cohesive Mesons.....
..................Hiroshi Enatsu & Pong Yul Pac 6 (1951), 665

Transformation Function in Quantum Electrodynamics (L)........
..................................Y. Katayama 7 (1952), 265

On the Green-Functions of the Quantum Electrodynamics (L).....
.........R. Utiyama, S. Sunakawa & T. Imamura 7 (1952), 328

Note on the Physical Connection between Electron's Electromagnetic
Mass and Its Charge (L)................K. Baba 7 (1952), 328

On the Renormalization Theory of the Interaction of Electrons and
Photons...........................Gyo Takeda 7 (1952), 359

On the Renormalization in Quantum Electrodynamics.............
.........Susumu Kamefuchi & Hiroomi Umezawa 7 (1952), 399

On the Role of Longitudinal and Scalar Photons (L)............
.......................T. Kimura & Y. Miyachi 7 (1952), 419

Vacuum Polarization by Spin One Particles (L)..................
..................................J. McConnell 7 (1952), 421

On the Well-ordered *S*-Matrix.............Shoichi Hori 7 (1952), 578
(*cf.* Errata: Vol. 8, p. 142)

Note on the Non-Relativistic Limit of the Compton Scattering (L)..
......................................S. Goto 7 (1952), 585

Remark on the Self-Energy Problem of the Photon (L)..........
..........................O. Hara & H. Shimazu 7 (1952), 591

Convergence Problem in Quantum Electrodynamics (L)..........
...................Y. Katayama & K. Yamazaki 7 (1952), 601

05 Quantum Electrodynamics *(continued)*

On the Theory of the .Green-Functions in Quantum-Electrodynamics
...Ryoyu Utiyama, Sigenobu Sunakawa & Tsutomu Imamura
8 (1952), 77

A New Attempt on the Self-Energy Problem of the Photon........
..................Osamu Hara & Haruo Shimazu **8** (1952), 265

The Effect of Damping on Radiative Corrections to Electron Scattering and the Problem of Infrared Catastrophe..............
..................R. C. Majumdar & A. N. Mitra **8** (1952), 479

On Gauge Invariance in Electrodynamics and the Self-Energy Problems of the Photon (L)...O. Hara & H. Okonogi **9** (1953), 184

New Formulation of One-Body Problem in Quantum Electrodynamics
..................Mikio Namiki & Yoshio Suzuki **9** (1953), 223
(*cf.* Errata: Vol. 10, p. 700)

On the Gauge Invariance of the Neutral Vector Meson Theory.....
..................................R. J. Glauber **9** (1953), 295

On the Transition Amplitude in Quantum Electrodynamics.........
..................................Shoichi Hori **9** (1953), 299

Electromagnetic Shifts of Energy Levels and *C*-Meson Hypothesis
(L)..................................O. Hara **9** (1953), 322

On Gauge Invariance in Electrodynamics and the Self-Energy Problem of the Photon...Osamu Hara & Hisaichiro Okonogi **10** (1953), 191

On the Gauge Invariancy and the Structure of Elementary Particle
(L)...........................Y. Takahashi **10** (1953), 366

Effect of Electromagnetic Radiation on Lamb Shift (L)...........
.....................................I. Singh **10** (1953), 476

The Photon Self-Energy Problem and Microscopic Space-Time Structure (L)...........................T. Kimura **10** (1953), 577

Note on the Neutral Vector Meson Theory (L)..................
.................................R. J. Glauber **10** (1953), 690

On the Green-Functions of Many-Electron Problem...............
.................................Shinzô Nakai **11** (1954), 155

Renormalization of Two-Electron Green-Function.................
...Sigenobu Sunakawa, Tsutomu Imamura & Ryoyu Utiyama
12 (1954), 642

05 Quantum Electrodynamics (*continued*)

Effect of Radiation on the Self-Energy of an Electron (L) .... D. S. Kothari & F. C. Auluck **13** (1955), 100

On the Renormalization of Heisenberg Treatment .... Ichie Watanabe **14** (1955), 151

On Quantum Electrodynamics without Subsidiary Conditions .... Shozi Ozaki **14** (1955), 511

On the Use of Feynman Amplitudes in the Quantum Field Theory .... Ziro Maki **15** (1956), 237

On the Renormalization Theory of Quantum Electrodynamics (L) .... S. Kamefuchi & H. Umezawa **15** (1956), 298

The Creation of an Electron Pair by a Fast Charged Particle .... Toshiyuki Murota, Akira Ueda & Hajime Tanaka **16** (1956), 482

On the Foundation and the Applicability of Williams-Weizsäcker Method .... Toshiyuki Murota & Akira Ueda **16** (1956), 497

Quantum-Electrodynamical Corrections to Energy-Levels of Helium .... Huzihiro Araki **17** (1957), 619

Some Considerations on the High-Energy Electron-Proton Scattering and the Nucleon Mass Difference .... Kichiro Hiida & Makoto Sawamura **18** (1957), 451

General Theory of Infrared Divergence .... Noboru Nakanishi **19** (1958), 159

Quantum Electrodynamics with the Indefinite Metric——*Non-Lorentz-Invariance of the Gupta Formalism*—— .... Sigenobu Sunakawa **19** (1958), 221

On the Radiative Corrections to the Scattering of Mesons in an External Electromagnetic Field (L) .... A. K. Bhatia & J. Sucher **20** (1958), 397

On the Positronium in Metals (L) .... H. Kanazawa **20** (1958), 400

Quantum Theory in Pseudo-Hilbert Space .... Gaku Konisi & Takesi Ogimoto **20** (1958), 868

Some Feasible Tests of Quantum Electrodynamics at Small Distances .... Steven C. Frautschi **Sup.** 8 (1958), 21

06 Meson Theory

On the Interaction between Vector Mesons and Nucleons .... Shoji Ozaki 1 (1946), 56

On the Effect of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. I .... Sin-itiro Tomonaga 1 (1946), 83

A Note on the Method of Radiation Damping and Its Application to the Photo-Mesonic Process .... Minoru Kobayasi & Kuninosuke Imaeda 1 (1946), 102

On the Effect of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. II .... Sin-itiro Tomonaga 1 (1946), 109

On the Effect of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. III .... Sin-itiro Tomonaga 2 (1947), 6

On the Effcet of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. IV .... Sin-itiro Tomonaga 2 (1947), 63

On the Meson Pair Theory of Nuclear Forces. II (A) .... S. Noma 2 (1947), 92

Note on the Scattering of a Meson on colliding with a Nucleon (A) .... S. Tomonaga 2 (1947), 96

Modified Meson Pair Theory (L) .... S. Noma 2 (1947), 159

On the Mesic Self-Field around a Nucleon .... Kugao Nakabayasi 2 (1947), 163

On the Interaction of Mesons with the Gravitational Field. II .... Ryoyu Utiyama 3 (1948), 14

On Wentzel's Method in the Meson Theory .... Tatuoki Miyazima, Takao Tati & Sin-itiro Tomonaga 3 (1948), 26

On the Classical Model of the Bremsstrahlung of the Vector Meson (A) .... S. Hayakawa & Y. Miyamoto 3 (1948), 209

On the Meson Pair Theory of Nuclear Forces. III (A) .... H. Enatsu & S. Noma 3 (1948), 215

On the Meson Pair Theory of Nuclear Forces. IV (A) .... S. Noma & S. Hiroishi 3 (1948), 216

Absorption and Decay of Mesons in the Pair Theory (A) .... S. Noma 3 (1948), 216

Divergence Difficulty and Mixed Meson Theorty. I .... Gentaro Araki 3 (1948), 422

06 **Meson Theory** *(continued)*

Reaction of Radiation Field on Meson (L) .... K. Baba & S. Kanesawa 3 (1948), 443

Supermultatempa Teorio por Mezonaj Kampoj (L) .... F. J. Belinfante 3 (1948), 460

Divergence Difficulty and Mixed Meson Theory. II .... Gentaro Araki 4 (1949), 34

Reaction of Meson Field on Nucleon (L) .. K. Baba & D. Ito 4 (1949), 95

On the Meson Pair Theory of Nuclear Forces in the Interaction Representation (L) .... S. Kanesawa 4 (1949), 238

On the Electromagnetic Self-Energy of Meson (L) .... S. Hanawa & S. Kanesawa 4 (1949), 385

On the Life of the Neutral Meson (L) ...... S. Hayakawa 4 (1949), 386

Selection Rule for Meson Problem (L) .... H. Fukuda & Y. Miyamoto 4 (1949), 389

On the Gauge-Difficulty in the γ-Decay of the Neutral Scalar Meson .... Daisuke Ito & Tatuoki Miyazima 4 (1949), 492

Reaction of Meson Field on Nucleon (L) .... H. Kita 4 (1949), 566

The Covariant Formalism of the Theory of Damping (L) .... T. Miyazima, M. Sasaki, R. Suzuki & N. Fukuda 5 (1950), 152

On the Electromagnetic Properties of Mesons (L) .... T. Kinoshita & Y. Nambu 5 (1950), 307

Radiative Corrections to Decay Processes. I——*The Meson Decay*—— .... Sigeo Hanawa & Tatuoki Miyazima 5 (1950), 459

On the Interaction of Mesons with the Electromagnetic Field. I .... Tôichirô Kinoshita 5 (1950), 473

On the Interaction of Mesons with the Electromagnetic Field. II .... Tôichirô Kinoshita & Yoichiro Nambu 5 (1950), 749

On the Anomalous Magnetic Moment of Meson .. Yôrô Ôno 5 (1950), 861

On the Interaction of Mesons and Nucleons .... Hiroshi Enatsu 5 (1950), 883

On the Equivalence of Pseudoscalar and Pseudovector Coupling Constants in Pseudoscalar Meson Theory (L) .... M. Sugawara & Y. Ôno 5 (1950), 901

06 Meson Theory *(continued)*

Note on the Classical Equations of Motion of Nucleons (L) ...
... H. Kanazawa **5** (1950), 1050

On Gauge Invariance and Equivalence Theorems ...
Ziro Koba, Nobumichi Mugibayashi & Shinzô Nakai **6** (1951), 322

On the Meson Cloud around the Nucleons (L) ...
... H. Umezawa, Y. Takahashi & S. Kamefuchi **6** (1951), 426

Generalized Furry's Theorem for Closed Loops (L) ...
... K. Nishijima **6** (1951), 614

On the Self-Energies of Mesons ...
... Kazuo Yamazaki & Hiroshi Enatsu **6** (1951), 731

Note on the Bloch-Nordsieck's Method ... Gyo Takeda,
Yasutaka Tanikawa, Tosiya Taniuti & Keiiti Saeki **6** (1951), 994

Generalized Furry's Theorem for Closed Loops. II (L) ...
... K. Nishijima **6** (1951), 1027

On the Equivalence Principle (L) .. T. Dodo & R. Utiyama **7** (1952), 589

Tomonaga Approximation in Meson Theory (L) ...
... H. Hasegawa **8** (1952), 494

On the Scattering Problem in Pseudoscalar Meson in Pseudovector
Coupling ... Katuro Sawada **9** (1953), 455

Scattering Problem in the Intermediate-Coupling Theory. I ...
.. Ziro Maki, Masatomo Sato & Sin-itiro Tomonaga **9** (1953), 607

Nonlinear Pseudoscalar Meson Theory (L) ... F. Cap **10** (1953), 235

A Remark on the Strong Coupling Approximation in Meson-Nucleon
Scattering ... Ziro Maki & Masatomo Sato **10** (1953), 386

Recoil Effects in the Strong Coupling Theory ...
... Toshiyuki Toyoda **10** (1953), 415

On the Many-Body Problem in the Intermediate Coupling Theory. I
... Takao Tati **10** (1953), 421

On a Covariant Generalization of Tamm-Dancoff Approximation for
Pion-Nucleon Scattering (L) ... K. Itabashi **11** (1954), 227

Renormalization in Generalized Tamm-Dancoff Approximation for
Pion-Nucleon Scattering (L) ... K. Itabashi **11** (1654), 228

06 **Meson Theory** *(continued)*

The Classical Equations of a Point Particle in a Charged Symmetric Meson Field...
.......R. C. Majumdar, S. Gupta & S. K. Trehan **12** (1954), 31
(*cf.* Errata: Vol. 12, p. 697)

On the Renormalization in Tamm-Dancoff Approximation for One-Nucleon Problem. I ——*A Covariant Generalization of the Tamm-Dancoff Method*——.......Kiyomi Itabashi **12** (1954), 494

On the Renormalization in Tamm-Dancoff Approximation for One-Nucleon Problem. II ——*Subtraction of Divergences in the Generalized Tamm-Dancoff Equations*——................
...............................Kiyomi Itabashi **12** (1954), 585

Zero-Energy Mesonic Processes and Renormalization in D.T.G.'s Formalism (L) ....S. Chiba & M. Namiki **12** (1954), 693

Zero-Energy Mesonic Processes and Renormalization in Schwinger's Formalism (L)..M. Namiki, S. Chiba & S. Hanawa **12** (1954), 694

Ward's Identity in Neutral Scalar Meson-Nucleon System (L).....
.........................K. Hiida & S. Machida **13** (1955), 219

On the Intermediate Coupling Theory of Pseudoscalar Meson Field and a Nucleon.............Daisuke Ito, Yoneji Miyamoto &
Yukihiko Watanabe **13** (1955), 594

On the Analysis for the Proper Field of a Nucleon..............
............................Yukihiko Watanabe **13** (1955), 603

Double Meson Production in the Intermediate-Coupling Theory. I...
..Akira Komatsuzawa, Yasuo Munakata & Hiroichi Hasegawa
14 (1955), 65

Connection of the Strong Coupling Theory with the Weak Coupling Theory in the Bound Meson Problem——*The Symmetrical Scalar Theory*——...Smio Tani & Wataro Watari **14** (1955), 243

On the Heisenberg's Non-Linear Meson Equation (L) ....
.................................T. Taniuti **14** (1955), 408

Recoil Effects in the Strong Coupling Theory. II.................
.... Toshiyuki Toyoda **14** (1955), 473

Situation of Rarita-Schwinger Particle as a Model of Nucleon Isobar (L)....................... D. Ito & S. Minami **14** (1955), 487

06 Meson Theory *(continued)*

Low Energy Limits of Photon-Nucleon and Pion-Nucleon Collisions..
.......Sigeo Hanawa, Mikio Namiki & Shin Chiba **14** (1955), 551

Investigation of the Chew-Low Equation by Iteration.............
...............Haruyuki Fujino & Jun'ichi Osada **17** (1957), 751

Pion-Nucleon Interaction according to the Previous Theory (L).....
..................O. Hara, Y. Fujii & Y. Ohnuki **17** (1957), 820

Charge Distribution of Pions produced in High Energy Nuclear Collisions......................Yoshihiro Yamamoto **18** (1957), 81

Covariant Solutions of the Bethe-Salpeter Equation................
.....................H. S. Green & S. N. Biswas **18** (1957), 121

Static Model in the Meson Theory......Masao Sugawara **18** (1957), 383

Pion-Nucleon Scattering and the Structure of the Pion.............
.............................Shigeru Machida **18** (1957), 467

Analysis of Neutron-Electron Interaction in the Relativistic Perturbation Theory......................Kin-ichi Ishida **18** (1957), 493

Two-Pion Exchange Nuclear Potential............Michiji Konuma,
Hironari Miyazawa & Shoichiro Otsuki **19** (1958), 17

The Dispersion Relations for the Scattering of Photons from Proton
.....................Tomoya Akiba & Iwao Sato **19** (1958), 93

An Attempt at Reformulating Pion-Nucleon Interaction. I——*Introduction of K-Space*——...............................
.....Osamu Hara, Yasunori Fujii & Yoshio Ohnuki **19** (1958), 129

On Puppi's Determination of the Pion-Nucleon Coupling Constant (L)
......K. Matsumoto, S. Otsuki, H. Shimodaira & E. Yamada
19 (1958), 216

On the Static Approximation of the γ_5 Meson Theory............
.............................Akira Kanazawa **19** (1958), 330

π-N Interactions in GeV Region............................
....Yujiro Kakudo, Tetuo Goto & Ryuzo Nakasima **19** (1958), 353

An Attempt at Reformulating Pion-Nucleon Interaction. II........
——*Scattering of Antiproton by Nucleon*——............
...................Osamu Hara & Yasunori Fujii **20** (1958), 89

06 **Meson Theory** *(continued)*

The Global Symmetry of Pion-Baryon Interactions and Bound States of Hyperon-Nucleon System (L).....Y. Yamaguchi **20** (1958), 112

Effect of Virtual Nucleon Pairs to the Electromagnetic Structure of the Nucleon.......Shigeo Goto & Shigeru Machida **20** (1958), 216

Mesic Correction to the Beta-Decay in a Nucleus.................. J. Fujita, Z. Matumoto, E. Kuroboshi & H. Miyazawa **20** (1958), 308

Composite Model of Pion and Pion-Nucleon Interaction............ ....Chiaki Ihara & Shigeaki Hatano **20** (1958), 356

Dispersion Relations and Vertex Properties in Perturbation Theory.. ....K. Symanzik **20** (1958), 690

The Dispersion Relation and the Pion-Nucleon Interaction Cross Section at Very High Energies.............................. ..Tetsuro Sakuma, Shinya Furui & Akira Kanazawa **20** (1958), 835

Derivation of the Two Nucleon Potential....................... ....Abraham Klein & Bruce H. McCormick **20** (1958), 876

Meson Production in Meson-Nucleon Interaction.................. ....S. K. Kundu **20** (1958), 939

Some Remarks on the Scattering Problem (L)....M. Ida **20** (1958), 979

On the Interaction of Elementary Particles. I.................... .... Hideki Yukawa **Sup. 1** (1955), 1

On a Possible Interpretation of the Penetrating Component of the Cosmic Ray..................Hideki Yukawa **Sup. 1** (1955), 11

On the Interaction of Elementary Particles. II................... ....Hideki Yukawa & Shoichi Sakata **Sup. 1** (1955), 14

On the Interaction of Elementary Particles. III.................. .... Hideki Yukawa, Shoichi Sakata & Mituo Taketani **Sup. 1** (1955), 24

On the Interaction of Elementary Particles. IV.................. ....Hideki Yukawa, Shoichi Sakata, Minoru Kobayasi & Mituo Taketani **Sup. 1** (1955), 46

On the Wave Equation of Meson............................... ....Mituo Taketani & Shoichi Sakata **Sup. 1** (1955), 84

Note on Casimir's Method of the Spin Summation in the case of the Meson.. Shoichi Sakata & Mituo Taketani **Sup. 1** (1955), 98

06 Meson Theory *(continued)*

Models and Methods in the Meson Theory..........................Hideki Yukawa **Sup. 1** (1955), 238

Zur Theorie des Mesotrons. I.....Sin-itiro Tomonaga **Sup. 2** (1955), 1

Zur Theorie des Mesotrons. II......Tatuoki Miyazima & Sin-itiro Thmonaga **Sup. 2** (1955), 21

Bemerkung über die Streuung der Mesotronen am Kernteilchen............................Sin-itiro Tomonaga **Sup. 2** (1955), 68

On the Mesotron Theory of Nuclear Forces.....Tatuoki Miyazima & Shin-itiro Tomonaga **Sup. 2** (1955), 82

On the Effect of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. I....Sin-itiro Tomonaga **Sup. 2** (1955), 119

On the Effect of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. II....Sin-itiro Tomonaga **Sup. 2** (1955), 138

On the Effect of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. III...Sin-itiro Tomonaga **Sup. 2** (1955), 154

On the Effect of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. IV...Sin-itiro Tomonaga **Sup. 2** (1955), 173

On Wentzel's Method in the Meson Theory......Tatuoki Miyazima, Takao Tati & Sin-itiro Tomonaga **Sup. 2** (1955), 181

Scattering Problem in the Intermediate-Coupling Theory. I......... Ziro Maki, Masatomo Sato & Sin-itiro Tomonaga **Sup. 2** (1955), 193

07 Elementary Particle Interactions

On the Correlations between Mesons and Yukawa Particles........................Shoichi Sakata & Takesi Inoue **1** (1946), 143

On the Decay of the Charged Meson (L)....Y. Tanikawa **2** (1947), 31

The Theory of the Interaction of Elementary Particles. I ——*The Method of the Theory of Elementary Particles*——..Shoichi Sakata **2** (1947), 145

On the Cosmic-Ray Meson and the Nuclear Meson (L)..Y. Tanikawa **2** (1947), 220

The Theory of Interaction of Elementary Particles. II——*The Electromagnetic Self-Energy of the Elementary Particles*——.................................Osamu Hara **3** (1948), 188

(*cf.* Errata: Vol. 3, p. 323)

07 Elementary Particle Interaction *(continued)*

Note on the Two Meson Hypothesis (L)....S. Hayakawa 3 (1948), 200

On the Correlation between Yukawa Particle and Meson. II (A)...
....S. Sakata 3 (1948), 212

On the Nature of the Mesotron (A) ....H. Yukawa 3 (1948), 217

On the Relations between the Cosmic-Ray Mesons and Nuclear
Mesons. I (L) ....Y. Tanikawa 3 (1948), 314

On the Relations between the Cosmic-Ray Mesons and Nuclear
Mesons. II (L) ....Y. Tanikawa 3 (1948), 315

On the Correlation between Yukawa Particle and Meson (L) ......
..........................T. Inoue & S. Ogawa 3 (1948), 319

The Theory of the Interaction of Elementary Particles. III ——*On the Nature of the C-Meson*—— ....
................Osamu Hara & Makoto Tatsuoka 3 (1948), 369

On the γ-Decay of Neutral Meson (L) ....
.....................H. Fukuda & Y. Miyamoto 4 (1949), 235

On the γ-Decay of Neutral Meson ....
..............Hiroshi Fukuda & Yoneji Miyamoto 4 (1949), 347

The Half-Life of Radioactive Decay of Free Neutron (L).........
.... N. Shôno & H. Hagiwara 4 (1949), 364

On the Gauge-Difficulty in the γ-Decay of the Neutral Scalar Meson
(L).....................D. Ito & T. Miyazima 4 (1949), 380

Application of Pauli's Regulator to the γ-Decay of Neutrettos (L)..
......H. Fukuda, Y. Miyamoto, T. Miyazima & S. Tomonaga
4 (1949), 385

The Three Quanta Disintegration of the Neutral Meson (L) ......
....................H. Fukuda & Y. Miyamoto 4 (1949), 392

On the Self-Energy of the Neutretto (L)....Y. Katayama 4 (1949), 396

Applicability of Pauli's Regulator to the γ-Decay of Neutrettos.....
H. Fukuda, Y. Miyamoto, T. Miyazima, S. Tomonaga, S. Oneda,
S. Ozaki & S. Sasaki 4 (1949), 477

On the Gauge-Difficulty in the γ-Decay of the Neutral Scalar Meson
.... Daisuke Ito & Tatuoki Miyazima 4 (1949), 492

07 **Elementary Particle Interactions** *(continued)*

On the mu-Meson Capture..................................
Mituo Taketani, Muneo Sasaki & Seitaro Nakamura **4** (1949), 552

The Observability of the C-Meson..........Shuzo Ogawa **5** (1950), 72

On the μ-Meson Decay (L)....S. Ogawa & S. Kamefuchi **5** (1950), 311

A Note on the C-Meson Hypothesis (L) ....T. Kinoshita **5** (1950), 335

On the New Mode of Interaction between Spinor Fields...........
..................S. Ozaki, S. Oneda & S. Sasaki **5** (1950), 491

On the Applicability of the Method of the Mixed Fields in the Theory of the Elementary Particles........................
..............Shoichi Sakata & Hiroomi Umezawa **5** (1950), 682

On the Method of the Theory of Elementary Particles ....
Mituo Taketani, Seitaro Nakamura & Muneo Sasaki **5** (1950), 730

Analysis on the Two Meson Theory.................S. Nakamura,
H. Fukuda, K. Ono, M. Sasaki & M. Taketani **5** (1950), 740

On the Mass of Cohesive Meson and the Mass Difference of Nucleons
(L).....................H. Enatsu & P. Y. Pac **6** (1951), 261

On the Self-Energies of Nucleons (L) ....H. Enatsu **6** (1951), 434

On the Mass of Cohesive Meson and the Mass Difference of Nucleons. II (L)..............H. Enatsu & P. Y. Pac **6** (1951), 435

On the Self-Energies of Nucleons.........Hiroshi Enatsu **6** (1951), 643

On the Mass Difference of Nucleons and the Cohesive Mesons.....
..................Hiroshi Enatsu & Pong Yul Pac **6** (1951), 665

On the Short μ-Meson Tracks from π-Meson Decays (L)..........
........T. Nakano, J. Nishimura & Y. Yamaguchi **6** (1951), 1028

Excited States of Elementary Particle and the Quantization of Elementary Particles (L)............M. Sugawara **7** (1952), 599

On the Natural Decay of the Free Neutron.......................
.... Sho Tanaka & Motô Itô **9** (1953), 169

On Some Properties of the Interactions between Elementary Particles
.................................Sadao Oneda **9** (1953), 327

On the Families of Spinor Fields (L) ....
..........................S. Oneda & H. Umezawa **9** (1953), 685

Some Comments on the Theory of V-Particle (L)..K. Ono **10** (1953), 111

07 **Elementary Particle Interactions** *(continued)*

A Speculation on V-Spin .... D. C. Peaslee **10** (1953), 227

On the Theory of β-Decay (L) .. Y. Tanikawa & K. Saeki **10** (1953), 232

On the Interaction Forms of the Beta-Decay (L) .... Y. Tanikawa **10** (1953), 361

On the Weak Universal Boson-Fermion Interaction (L) .... S. Ogawa, H. Okonogi & S. Oneda **11** (1954), 330

An Empirical "Charge Dependence" Relation to the Rest-Masses of Elementary Particles (L) .... S. Yoshikawa & T. Hasebe **12** (1954), 403

On the Universality of the Weak Boson-Fermion Interaction .... Kenzo Iwata, Shuzo Ogawa, Hisaichiro Okonogi, Bunji Sakita & Sadao Oneda **13** (1955), 19

On the Competition between Decay and Capture of the Unstable Particles due to the Weak Interactions .... Shuzo Ogawa **13** (1955), 367

Note on the Decay Interactions of Hyperons and Heavy Meson (L) .... M. Kawaguchi & K. Nishijima **15** (1956), 180
(*cf.* Errata: Vol. 15, p. 419)

Note on the Decays of Σ-Particles (L) .... M. Kawaguchi & K. Nishijima **15** (1956), 182

On the Elementarity of the Weak Boson-Fermion Interaction. I (L) .... S. Oneda, S. Hori & A. Wakasa **15** (1956), 300

On the Elementarity of the Weak Boson-Fermion Interaction. II (L) .... S. Oneda, S. Hori, & A. Wakasa **15** (1956), 302

On K-Meson Decays and the Universal Interactions (L) .... S. Oneda, S. Hori & A. Wakasa **15** (1956), 304

Theory of Mass Reversal in the Quantized Field Theory .... Tadashi Ouchi, Kei Senba & Minoru Yonezawa **15** (1956), 431

On the Universality of the Weak Interaction .... Shuzo Ogawa **15** (1956), 487

The Decay Interaction of $K_{\mu 3}$ and K_{e3} and Fermi Interaction (L) ... . S. Furuichi, T. Kodama, Y. Sugahara, M. Yonezawa & A. Wakasa **16** (1956), 64

Interaction of K^{+}-Meson and Nucleon (L) ..... S. Minami **16** (1956), 66

07 **Elementary Particle Interactions** *(continued)*

An Attempt of Generalizing the Hypothesis of Charge Independence
(L) .... O. Hara & Y. Fujii **16** (1956), 149

A Conjecture on the Possible Existence of New Hyperons (L) .....
.... O. Hara & Y. Fujii **16** (1956), 150

The Range of the Interaction between Different Fermions ....
.... Michiji Konuma **16** (1956), 259

Charge Independence Hypothesis and Leptons (L) ....
.... T. Ouchi & K. Senba **16** (1956), 528

Some Consequences of the Compound Hypothesis for Elementary
Particles .... Ken-iti Matsumoto **16** (1956), 583

The Composite Model for New Unstable Particles. I ....
.... Sho Tanaka **16** (1956), 625

The Composite Model for New Unstable Particles. II ....
.... Sho Tanaka **16** (1956), 631

On a Theory of the Composite Model of Elementary Particles ......
.... Ziro Maki **16** (1956), 667

On a Composite Model for the New Particles (L) ....
.... S. Sakata **16** (1956), 686

Special Theory of Relativity and the Structure of Elementary Particles
(L) .... H. Yukawa **16** (1956), 688

On the Spins and Decay Interactions of $K_{\mu 3}$ and K_{e3} ....
..S. Furuichi, T. Kodama, S. Ogawa, Y. Sugahara, A. Wakasa
& M. Yonezawa **17** (1957), 89
(*cf.* Errata: Vol. 17, p. 618)

On the Universality of the Weak Interactions .. Suteo Goto **17** (1957), 107

An Attempt of Generalizing the Hypothesis of Charge Independence.
I——*Selection Rule for the Decay Process*—— ....
.... Osamu Hara & Yasunori Fujii **17** (1957), 313

Antiproton-Nucleus and Antiproton-Proton Interactions (L) ....
...M. Nozawa, T. Goto, N. Yajima & R. Nakasima **17** (1957), 504

Quantum Numbers for Lepton Processes (L) ....
.... Y. Katayama **17** (1957), 510

The Coupling Constants of Strong Interactions (L) ....
.... S. Miyachi **17** (1957), 515

07 Elementary Particle Interactions *(continued)*

A Remark on the Lepton Processes (L) ....S. Goto **17** (1957), 517

On a Classification of Light Particles (L) ....K. Senba **17** (1957), 519

Mathematical Formulation of the Gell-Mann-Nishijima Scheme for New Particles......................Sigeo Hanawa **17** (1957), 592

On the Systematization of the Strongly Interacting Particles (L) ... . M. Ida **17** (1957), 733

Selection Rule imposed by Mass Reversal..Tadashi Ouchi **17** (1957), 743

A Remark on High Energy Phenomena .... Saburo Amai, Toshiyuki Murota & Minoru Nishida **17** (1957), 807

Some Remarks on the Charged Mesic Decay of $^3H_\Lambda$ (L) .... T. Ogimoto & Y. Yamaguchi **17** (1957), 817

An Attempt of Generalizing the Invariance of the Theory under the Charge Conjugation (L) .... O. Hara, Y. Fujii & Y. Ohnuki **17** (1957), 819

The Annihilation of Antinucleon according to the Previous Theory (L)...............O. Hara, Y. Fujii & Y. Ohnuki **17** (1957), 822

Parity Nonconservation and Decay of Hyperon ....Shigeo Minami & Yoshio Yamaguchi **18** (1957), 39

Charge Distribution of Pions produced in High Energy Nuclear Collisions...................Yoshihiro Yamamoto **18** (1957), 81

Some Remarks on the Goldhaber Model for Strange Particles (L) .. ..R. Kawabe **18** (1957), 96

On the Heavy Meson Production in the π^--Proton Reaction (L) ....T. Ogimoto & T. Shimizu **18** (1957), 213

The Parity Conservation and the Strength of the Interaction of Elementary Particles.................Sho Tanaka **18** (1957), 295

On the Cut-off Theory in Quantum Field Theory (L) .... S. Aramaki **18** (1957), 320

Dispersion Relations in Nucleon-Nucleon Scattering (L) ....S. Matsuyama & H. Miyazawa **18** (1957), 328

Anomalous Magnetic Moments of Hyperons and Mirror Theorem... ....Hiroshi Katsumori **18** (1957), 375

07 **Elementary Particle Interactions** *(continued)*

Some Considerations on the High-Energy Electron-Proton Scattering and the Nucleon Mass Difference .... Kichiro Hiida & Makoto Sawamura **18** (1957), 451

Pion-Nucleon Scattering and the Structure of the Pion .... Shigeru Machida **18** (1957), 467

Analysis of Neutron-Electron Interaction in the Relativistic Perturbation Theory .... Kin-ichi Ishida **18** (1957), 493

Multiple Production of Particles and Hydrodynamical Aspect of Quantum Theory of Fields .... Mikio Namiki & Chikashi Iso **18** (1957), 591

On the Theory of the Unstable Particle. II.. Kunio Naito **18** (1957), 614

The Utility of the "Individual Γ_5 Transformation" (L) .... K. Fujii & K. Iwata **18** (1957), 666

Dispersion Relation for the Photoproduction of K-Mesons .... Susumu Okubo **19** (1958), 43

The Dispersion Relations for the Scattering of Photons from Proton .... Tomoya Akiba & Iwao Sato **19** (1958), 93

On the Decay Interactions of Strange Particles .... Yoshihiko Miyachi **19** (1958), 112

An Attempt at Reformulating Pion-Nucleon Interaction. I ——*Introduction of K Space*—— .... Osamu Hara, Yasunori Fujii & Yoshio Ohnuki **19** (1958), 129

Invariants in $K_{\mu3}$ and K_{e3} Decays .... R. Gatto **19** (1958), 146

Multiple Meson Production in Antinucleon-Nucleon Annihilation .... Nobuo Yajima & Keizo Kobayakawa **19** (1958), 192

Dispersion Relations for K Meson-Nucleon Scattering .... Keiji Igi **19** (1958), 238

On the Longitudinal and Transverse Polarization of Positrons in μ^+-Meson Decay.. Shoichi Hori, Hiroshi Segawa & Akira Wakasa **19** (1958), 249

Antinucleon-Nucleon Interactions.. Ziro Koba & Gyo Takeda **19** (1958), 269

Mass Levels and Relative Parities of Baryons (L) .... H. Katsumori **19** (1958), 342

07 Elementary Particle Interactions *(continued)*

π-N Interactions in GeV Region .... Yujiro Kakudo, Tetuo Goto & Ryuzo Nakasima **19** (1958), 353

Parity-Nonconservation and the Spins of the Strange Particles .... Kiyomi Itabashi **19** (1958), 359

The Conservation Laws in the Lepton Process and Two Kinds of Neutrinos .... Ichiro Kawakami **19** (1958), 459

The Phenomenological Model of the Interaction of Elementary Particles .... Kanji Fujii & Kenzo Iwata **19** (1958), 475

Dispersion Relations in Nucleon-Nucleon Scattering .... Sadahiko Matsuyama & Hironari Miyazawa **19** (1958), 517
(*cf.* Errata: Vol. 20, p. 983)

Note on the Strange Particle Effects in S-Wave Pion-Nucleon Scattering (L) .... K. Nakayama **19** (1958), 581

Hyperon Decays and Characteristics of Interactions between Elementary Particles (L) .... Y. Taguchi & R. Kawabe **19** (1958), 586

The Spirality of the Decay Product (L) .... K. Fujii & K. Iwata **19** (1958), 589

A Covariant Ieterpretation of the Existence of the Parity Non-Conservation and the New Freedoms for Elementary Particles (L) .... K. Gotô **19** (1958), 592

Antinucleon Annihilation and Multiplicity of Emitted Pions (L) .... Z. Koba **19** (1958), 594

A Theory of Clothed Unstable Particles .... Noboru Nakanishi **19** (1958), 607

The Possible Existence of a Neutral Meson with Isotopic Spin 0 .... Yoshio Yamaguchi **19** (1958), 622

Isotopic Spin and Strange Particles .... Gyo Takeda **19** (1958), 631

A Theory of Lepton Which is Invariant under Space Inversion (L) .... K. Sekine **19** (1958), 740

On the $|\Delta I|=1/2$ Rule for the Decay of Σ (L) .... K. Itabashi **19** (1958), 747

An Attempt at Reformulating Pion-Nucleon Interaction. II ——*Scattering of Antiproton by Nucleon*—— .... Osamu Hara & Yasunori Fujii **20** (1958), 89

07 Elementary Particle Interactions *(continued)*

Global Symmetry and the Branching Ratios for the K^- Capture by the Nucleon..................Ken Kawarabayashi **20** (1958), 117

Phenomenological Model on the Interactions of Elementary Particles. II....................Kanji Fujii & Kenzo Iwata **20** (1958), 126

Isotopic Spin Selection Rule in Σ-Decays...Tetsuo Eguchi & Shozo Nagata **20** (1958), 144

Absorption Effects in Antinucleon Phenomena (L)...........................Y. Kakudo, T. Kammuri & R. Nakasima **20** (1958), 243

Coupling Constant of Kaon-Baryon Interaction. I (L).....................A. Komatsuzawa, R. Sugano & Y. Nogami **20** (1958), 246

Coupling Constant of Kaon-Baryon Interaction. II (L).....................A. Komatsuzawa, R. Sugano & Y. Nogami **20** (1958), 249

Parity Nonconservation and the Beta-Spectrum of RaE............. J. Fujita, M. Yamada, Z. Matumoto & S. Nakamura **20** (1958), 287

Composite Model of Pion and Pion-Nucleon Interaction.............................Chiaki Ihara & Shigeaki Hatano **20** (1958), 356

On the Consistency between the P-Wave Dispersion Relation and the Experiment (L)......T. Tsuchida & A. Kanazawa **20** (1958), 395

On Parity Nonconservation (L)..................T. Tati **20** (1958), 398

Dispersion Relation for K Meson-Nucleon Scattering and Its Application ....Keiji Igi **20** (1958), 403

Hypothesis of Invariance of CP Alone and Conservation of Parity in Strong Interactions ....Chikashi Iso **20** (1958), 410

Possible Experimental Tests on the Decay Interactions of Hyperons ....Kiyomi Itabashi **20** (1958), 457

New Interpretation of Hyperonic Charge and Its Generalization to Leptons.......................Takao Okabayashi **20** (1958), 583

Absorption Effects in Antinucleon Phenomena. II (L)...........................Y. Kakudo, T. Kammuri & R. Nakasima **20** (1958), 779

A Theory of Clothed Unstable Particles. II.. Noboru Nakanishi **20** (1958), 822

Theory of Unstable Particles in the Wave-Packet-Formalism.......................................Kunio Yamamoto **20** (1958), 857

07 Elementary Particle Interactions *(continued)*

Mass Reversal and Weak Interactions......Tadashi Ouchi **20** (1958), 909

Some Remarks on the Scattering Problem (L)....M. Ida **20** (1958), 979

Proton-Proton Scattering in the GeV Region ——*Criticism of the Blockhintsev-Bubelev Model*—— (L) .... J. Ôba & T. Goto **20** (1958), 982

On the Correlations between Mesons and Yukawa Particles......... ....Shoichi Sakata & Takesi Inoue **Sup. 1** (1955), 203

On the Cosmic-Ray Meson and the Nuclear Meson ....Yasutaka Tanikawa **Sup. 1** (1955), 211

On the mu-Meson Capture .... Mituo Taketani, Munes Sasaki & Seitaro Nakamura **Sup. 1** (1955), 226

Analysis on the Two Meson Theory................S. Nakamura, H. Fukuda, K. Ono, K. Sasaki & M. Taketani **Sup. 1** (1955), 244

Conservation Laws in the Isotopic Spin Space and Their Violation by the Electro-Magnetic Interaction ....Masaaki Kato & Gyo Takeda **Sup. 7** (1958), 35

On the Structure of Interactions...Hiroomi Umezawa **Sup. 7** (1958), 67

08 Electromagnetic Theory and Electron Theory

Quantum Mechanics of Circularly Polarized Photons. I ——*General Theory*—— ....Gentaro Araki **1** (1946), 125

Quantum Mechanics of Circularly Polarized Photons. II ——*Application to the Normal Zeeman Effect*—— ....Gentaro Araki **2** (1947), 1

Quantum Mechanics of Circularly Polarized Photons (A)......... ....G. Araki **2** (1947), 96

On the Classical Theory of the Electron. I..Ryoyu Utiyama **3** (1948), 114

On the Theory of Elliptically Polarized Photons (A)............. ....G. Araki **3** (1948), 214

On the Classical Theory of the Electron. II .... Ryoyu Utiyama **3** (1948), 219

On the Čerenkov Radiation.............Tosiya Taniuti **6** (1951), 207

Electromagnetic Radiation from Electron Plasma ....Satio Hayakawa & Nbnoru Hokkyo **15** (1956), 193

08 Electromagnetic Theory and Electron Theory *(continued)*

Orbits of an Electron in Static Electromagnetic Fields. I ....Giiti Iwata **15** (1956), 513

Energy Loss of a Charged Particle Traversing Ionized Gas and Injection Energies of Cosmic Rays........................... ....Satio Hayakawa & Kazuo Kitao **16** (1956), 139
(*cf.* Errata: Vol. 17, p. 129)

Ionization Loss Near the Origin of an Electron Pair of Very High Energy..............Iwao Mito & Hiroshi Ezawa **18** (1957), 437

On the Propagation of Hydromagnetic Waves in Compressible Ionized Fluid............................Tosiya Taniuti **19** (1958), 69

Separable Dynamical Systems of Staeckel in Flat Space............ ....Giiti Iwata **19** (1958), 369

Perfect Imaging Dynamical Systems..........Giiti Iwata **19** (1958), 375

Notes on the Magnetic Mirror Effect......Masatomo Sato **20** (1958), 737

09 Hydrodynamics

An Example of Isentropic Steady Flow in the Magnetohydrodynamics (L)..................................T. Taniuti **19** (1958), 749

Relativistic Magnetohydrodynamics..........Ken-iti Gotô **20** (1958), 1

An Example of One-Dimentional Oscillatory Motion in Magnetohydrodynamics (L)...................N. Mugibayashi **20** (1958), 241

On the Wave Propagation in the Non-Linear Fields. II ....Tosiya Taniuti **20** (1958), 529

11 μ-Mesons

On the Correlations between Mesons and Yukawa Particles ....Shoichi Sakata & Takesi Inoue **1** (1946), 143

On the Cosmic-Ray Meson and the Nuclear Meson (L) ....Y. Tanikawa **2** (1947), 220

On the Temperature Effect of Underground Cosmic Radiatson (L).. ....T. Miyazima **3** (1948), 99

Cosmic Ray Underground (L) ....S. Hayakawa **3** (1948), 199

Note on the Two Meson Hypothesis (L)......S. Hayakawa **3** (1948), 200

11 **μ-Mesous** *(continued)*

On the Correlation between Yukawa Particle and Meson (L) ....
.............................T. Inoue & S. Ogawa 3 (1948), 319

On the Existence of Light Nuclear Mesons (L) ....
..........M. Sasaki, S. Nakamura & S. Hayakawa 3 (1948), 454

On the mu-Meson Capture ....
..Mituo Taketani, Muneo Sasaki & Seitaro Nakamura 4 (1649), 552

Remarks on the Nuclear Disintegration by Meson Capture (L) .....
..........Y. Fujimoto, S. Hayakaya & Y. Yamaguchi 4 (1949), 575

Remark on the Energy Distribution of Disintegrated μ-Mesons (L)
....................S. Hayakawa & J. Nishimura 4 (1949), 577

On the μ-Meson Decay (L)....S. Ogawa & S. Kamefuchi 5 (1950), 311

Analysis on the Two Meson Theory ....S. Nakamura,
H. Fukuda, K. Ono, M. Sasaki & M. Taketani 5 (1950), 740

Interaction of μ-Meson with Matter. I ——*Nuclear Excitation by Electromagnetic Interaction* —........................
............Toshinosuke Muto & Makoto Tanifuji 6 (1951), 27
(*cf.* Errata: Vol. 6, p. 445)

Nuclear Interaction of μ-Meson ....Hiroshi Fukuda, Yoichi Fujimoto
& Masatoshi Koshiba 6 (1951), 788

On the Short μ-Meson Tracks from π-Meson Decays (L) ....
........T. Nakano, J. Nishimura & Y. Yamaguchi 6 (1951), 1028

The Burst Production by the μ-Meson (L) ....
............H. Komori, K. Miyanaga & S. Ogawa 7 (1952), 122

Interaction of μ-Meson with Matter. II——*Spontaneous Decay of Negative μ-Meson*——..Toshinosuke Muto, Makoto Tanifuji,
Kenzo Inoue & Takeo Inoue 8 (1952), 13

On the Spin of the μ-Meson..............Kenzo Iwata 10 (1953), 451

The Anomalous Magnetic Moment of the μ-Meson (L)...........
.............S. Hirokawa, H. Komori & S. Ogawa 14 (1955), 494

The Catalysis of Nuclear Fusion Reactions by μ-Mesons (L).......
.............C. Hayashi, T. Nakano, M. Nishida, S. Suekane
& Y. Yamaguchi 17 (1957), 615

11 μ-Mesons *(continued)*

On the Longitudinal and Transverse Polarization of Positrons in μ^+-Meson Decay .... Shoichi Hori, Hiroshi Segawa & Akira Wakasa **19** (1958), 249

Molecular Processes induced by μ^--Mesons in Hydrogen Bubble Chamber. I —*Transfer Process of μ^--Meson from Proton to Deuteron*— (L) .... M. Shimizu, Y. Mizuno & T. Izuyama **20** (1958), 777

The Mass and the Lifetime of the Mesotron .... Hideki Yukawa & Shoichi Sakata **Sup. 1** (1955), 72

Mass and Mean Lifetime of the Meson .... Hideki Yukawa & Shoichi Sakata **Sup. 1** (1955), 75

Note on the Absorption of Slow Mesotrons in Matter .... Hideki Yukawa & Taisuke Okayama **Sup. 1** (1955), 76

Effect of the Nuclear Coulomb Field on the Capture of Slow Mesons .... Sin-itiro Tomonaga & Gentaro Araki **Sup. 1** (1955), 82

On Yukawa's Theory of the Beta-Disintegration and the Lifetime of the Meson .... Shoichi Sakata **Sup. 1** (1955), 118

On the Meson Theory of the Penetrating Component of Cosmic Radiation .... Minoru Kobayasi **Sup. 1** (1955), 137

On the Correlations between Mesons and Yukawa Particles .... Shoichi Sakata & Takesi Inoue **Sup. 1** (1955), 203

On the Cosmic-Ray Meson and the Nuclear Meson .... Yasutaka Tanikawa **Sup. 1** (1955), 211

On the Temperature Effect of Undergroud Cosmic Radiation....... .... Tatuoki Miyazima **Sup. 1** (1955), 212

Cosmic-Ray Underground .... Satio Hayakawa **Sup. 1** (1955), 213

Note on the Two Meson Hypothesis .. Satio Hayakawa **Sup. 1** (1955), 214

On the Correlation between Yukawa Particle and Meson .... Takesi Inoue & Shuzo Ogawa **Sup. 1** (1955), 217

On the mu-Meson Capture .... Mituo Taketani, Muneo Sasaki & Seitaro Nakamura **Sup. 1** (1955), 226

Remarks on the Nuclear Disintegration by Meson Capture .... Yoichi Fujimoto, Satio Hayakawa & Yoshio Yamaguchi **Sup. 1** (1955), 231

11 **μ-Mesons** *(continued)*

On the Two-Meson Theory......Mituo Taketani, Seitaro Nakmuara,
Ken-ichi Ono & Mumeo Sasaki **Sup. 1** (1955), 234

Analysis on the Two Meson Theory..........................
..........Seitaro Nakamura, Hiroshi, Fukuda, Ken-ichi Ono,
Muneo Sasaki & Mituo Taketani **Sup. 1** (1955), 244

12 **π-Mesons, General** (see Meson Theory)

Magnetic Moment and Virtual Dissociation of Nuclear Particle......
..................................Gentaro Araki **1** (1946), 1

On the Correlations between Mesons and Yukawa Particles.........
....................Shoichi Sakata & Takesi Inoue **1** (1949), 143

On the Lifetime of the Neutral Meson (L).....................
............................Yasutaka Tanikawa **2** (1947), 31

On the Cosmic-Ray Meson and the Nuclear Meson (L)...........
...................................Y. Tanikawa **2** (1947), 220

On the Quantum Theory of Radiation Damping and the Lifetime of
the Meson ....Yasutaka Tanikawa **3** (1948), 38

Note on Tanikawa's Theory of Damping (L)..H. Enatsu **3** (1948), 96

On the Temperature Effect of Underground Cosmic Radiation (L)..
...................................T. Miyazima **3** (1948), 99

Cosmic Ray Underground (L)...............S. Hayakawa **3** (1948) 199

Note on the Two Meson Hypothesis (L)....S. Hayakawa **3** (1948), 200

Effect of the Radiation Field on the Meson Decay (A)...........
..................................T. Miyazima **3** (1948), 212

(*cf.* Errata: Vol. 3, p. 323)

On the Correlation between Yukawa Particle and Moson. II (A)....
......................................S. Sakata **3** (1948), 212

On the Nature of the Mesotron (A).........H. Yukawa **3** (1948), 217

On the Coupling Constant of Charged Meson in the Non-Symmetrical
Theory (A)...........................Y. Oda **3** (1948), 217

On the Relations between the Cosmic-Ray Mesons and Nuclear
Mesons. I (L)....................Y. Tanikawa **3** (1948), 314

On the Relations between the Cosmic-Ray Mesons and Nuclear
Meson. II (L)....................Y. Tanikawa **3** (1948), 315

12 π-Mesons, General *(continued)*

On the Correlation between Yukawa Particle and Meson (L) .... T. Inoue & S. Ogawa **3** (1948), 319

On the Neutral Meson .... Mituo Taketani **3** (1948), 349

On the γ-Decay of Neutral Meson (L) .... H. Fukuda & Y. Miyamoto **4** (1949), 235

Note on the Interaction Representation in case of Meson Field interacting with Electromagnetic Field (L) .... S. Kanesawa **4** (1949), 236

On the γ-Decay of Neutral Meson .... Hiroshi Fukuda & Yoneji Miyamoto **4** (1949), 347

On the Gauge-Difficulty in the γ-Decay of the Neutral Scalar Meson (L) .... D. Ito & T. Miyazima **4** (1949), 380

Selection Rule for Meson Problem (L) .... H. Fukuda & Y. Miyamoto **4** (1949), 389

Remarks on the Nuclear Disintegration by Meson Capture (L) .... Y. Fujimoto, S. Hayakawa & Y. Yamaguchi **4** (1949) 575

On the Electromagnetic Properties of Mesons (L) .... T. Kinoshita & Y. Nambu **5** (1950), 307

Analysis on the Two Meson Theory .... S. Nakamura, H. Fukuda, K. Ono, M. Sasaki & M. Taketani **5** (1950), 740

On the Anomalous Magnetic Moment of Meson .. Yôrô Ôno **5** (1950), 861

Selection Rules for Decays of π-Mesons and V-Particles .... Tetsuo Hamada & Masao Sugawara **8** (1952), 363

Effect of Nucleon Excited State on Magnetic Moment Anomaly .... Tetsuo Hamada **10** (1953), 309

Pion-Nucleon Scattering and Nucleon Isobar .... Akira Kanazawa & Masao Sugawara **10** (1953), 399

Damping Effect in the Gamma-Decay of a Neutral Pion (L) .... J. Iwadare & K. Nishijima **12** (1954), 108

Effect of the Pauli Moment on the γ-Decay of Neutral Meson (L) .... H. Katsumori **12** (1954), 241

A Generalization of the Foldy Transformation Ps-Ps Meson Theory (L) .... P. Y. Pac, S. Tani & K. Yamazaki **12** (1954), 689

A Note on the Damping of Pair Formation in Pseudoscalar Meson Theory (L) .... T. Hamada & Y. Shôno **13** (1955), 102

12 π-Mesons, General *(continued)*

Intermediate Coupling Meson Theory of Nuclear Forces. II ....Yukihisa Nogami & Hiroichi Hasegawa **15** (1956), 137

Nucleon Magnetic Moments in Ps-Ps Intermediate Coupling Meson Theory.......Akira Kanazawa & Masao Sugawara **16** (1956), 95

Some Identities for Renormalization Constants in S(S) and PS (PS) Meson Theories (L) ....K. Hiida **17** (1957), 520

A Kinematical Test for the Relation between the Coupling Constants in Meson Theory (L)..................K. Hiida **17** (1957), 605

Investigation of the Chew-Low Equation by Iteration............. ....Haruyuki Fujino & Jun'ichi Osada **17** (1957), 751

On the Effective Coupling Strength in the Static Pion Theory (L).. ....T. Kobayashi, J. Osada & S. Tani **18** (1957), 89

Numerical Discussions on *P*-Wave Meson-Nuclon Scattering (L).... .... T. Sawaguri & J. Osada **18** (1957), 91

Static Model in the Meson Theory......Masao Sugawara **18** (1957), 383

Pion-Nucleon Scattering and the Structure of the Pion............ .... Shigeru Machida **18** (1957), 467

On the Static Approximation of the γ_5 Meson Theory............ ....Akira Kanazawa **19** (1958), 330

Electromagnetic Properties of Nucleons .... Akira Kanazawa, Shinya Furui & Tetsuro Sakuma **20** (1958), 149

A Remark on the Anomalous Magnetic Moment in the Static Model (L)................Y. Hara & K. Kawarabayashi **20** (1958), 252

Effect of the Non-Relativistic Recoil of a Source Particle in Quantum Field Theories..Jun'ichi Osada & Haruyuki Fujino **20** (1958), 487

On the Absorptive Range in the Pion-Nucleon at High Energies (L) .... K. Ishida **20** (1958), 774

The Mass and the Lifetime of the Mesotron.................... ....Hideki Yukawa & Shoichi Sakata **Sup. 1** (1955), 72

Mass and Mean Lifetime of the Meson........................ ....Hideki Yukawa & Shoichi Sakata **Sup. 1** (1955), 75

Note on the Absorption of Slow Mesotrons in Matter.............. ....Hideki Yukawa & Taisuke Okayama **Sup. 1** (1955), 76

12 π-Mesons, General *(continued)*

The Spontaneous Disintegration of the Neutral Mesotron (Neutretto) ....Shoichi Sakata & Yasutaka Tanikawa **Sup. 1** (1955), 81

Effect of the Nuclear Coulomb Field on the Capture of Slow Mesons ....Sin-itiro Tomonaga & Gentaro Araki **Sup. 1** (1955), 82

Connection between the Meson Decay and the Beta-Decay .... Shoichi Sakata **Sup. 1** (1955), 83

On the Theory of the Meson Decay....Shoichi Sakata **Sup. 1** (1955), 109

On Yukawa's Theory of the Beta-Disintegration and the Lifetime of the Meson....................Shoichi Sakata **Sup. 1** (1955), 118

On the Meson Theory of the Penetrating Component of Cosmic Radiation...................Minoru Kobayasi **Sup. 1** (1955), 137

On the Mesotron of Spin One-Half..Tatuoki Miyazima **Sup. 1** (1955), 161

Note on the Lifetime of the Neutral Meson ....Yasutaka Tanikawa **Sup. 1** (1955), 174

Bemerkungen über die Natur des Mesotrons ....Hideki Yukawa **Sup. 1** (1955), 197

On the Correlations between Mesons and Yukawa Particles ....Shoichi Sakata & Takesi Inoue **Sup. 1** (1955), 203

On the Cosmic-Ray Meson and the Nuclear Meson ....Yasutaka Tanikawa **Sup. 1** (1955), 211

On the Temperature Effect of Underground Cosmic Radiation ....Tatuoki Miyazima **Sup. 1** (1955), 212

Cosmic-Ray Underground...........Satio Hayakawa **Sup. 1** (1955), 213

Note on the Two Meson Hypothesis..Satio Hayakawa **Sup. 1** (1955), 214

On the Correlation between Yukawa Particle and Meson ....Takesi Inoue & Shuzo Ogawa **Sup. 1** (1955), 217

On the Neutral Meson.............Mituo Taketani **Sup. 1** (1955), 219

Remarks on the Nuclear Disintegration by Meson Capture ....Yoichi Fujimoto, Satio Hayakawa & Yoshio Yamaguchi **Sup. 1** (1955), 231

On the Two-Meson Theory......Mituo Taketani, Seitaro Nakamura, Ken-ichi Ono & Muneo Sasaki **Sup. 1** (1955), 234

Models and Methods in the Meson Theory ....Hideki Yukawa **Sup. 1** (1955), 238

12 π-Mesons, General (*continued*)

Analysis on the Two Meson Theory ……………………… Seitaro Nakamura, Hiroshi Fukuda, Ken-ichi Ono, Muneo Sasaki & Mituo Taketani **Sup. 1** (1955), 244

13 π-Mesons, Reactions

On the Classical Model of the Meson Production in the Collision between Nucleons (A) ……………………… S. Hayakawa & Y. Miyamoto **3** (1948), 209

Remarks on the Experiments of the Scattering of Meson (A) ……………………… S. Hayakawa **3** (1948), 210

On the Interaction between a Negative Meson and a Proton (A) ……………………… O. Hara & H. Umezawa **3** (1948), 212

On the Beta-Disintegration Possibility accompanying with the Capture of a Negative Meson by a Nucleus (A) ……………………… Y. Tanikawa **3** (1948), 213

On the Multiple Production of Meson (L) .. S. Hayakawa **3** (1948), 321

On the Multiple Production of Mesons (L) ……………………… K. Sawada & S. Takagi **4** (1949), 239

On the Production of π-Mesons in Nucleon-Nucleon Collisions ……………………… Shuji Takagi **4** (1949), 557

Remarks on the Nuclear Disintegration by Meson Capture (L) ……… Y. Fujimoto, S. Hayakawa & Y. Yamaguchi **4** (1949), 575

Nuclear Disintegration by π-Meson Capture (L) ……… Y. Fujimoto, S. Hayakawa & Y. Yamaguchi **4** (1949), 576

Meson Production by *X*-Ray (L) ……………………… Z. Koba, T. Kotani & S. Nakai **5** (1950), 137
(*cf.* Errata : Vol. 5, p. 494 L)

Note on the Interaction of Meson with Nucleon (L) ……………………… S. Hayakawa **5** (1950), 319

The Determination of the Multiplicity and the Spectrum of the Meson produced by the Nucleon-Nucleon Collision (L) ……………………… S. Ogawa **5** (1950), 490

Meson Production by *X*-Ray (L) ……………………… Z. Koba, T. Kotani & S. Nakai **5** (1950), 494
(*Errata for* Vol. 5. p. 137)

13 **π-Mesons, Reactions** *(continued)*

The Fast Protons in π-Meson Stars (L)........................ .....Y. Fujimoto, K. Takayanagi & Y. Yamaguchi **5** (1950), 498

On the Production of γ-Rays accompanied by the Absorption of π-Meson by a Proton (L)....S. Ogawa & E. Yamada **5** (1950), 503

Production of Scalar and Pseudoscalar Mesons by Photons......... ....Gentaro Araki **5** (1950), 507

High Energy Nuclear Events..............Enrico Fermi **5** (1950), 570

On the Scattering of π-Mesons by Nucleons..................... ....J. Ashkin, A. Simon & R. E. Marshak **5** (1950), 634

Production of π-Mesons in Nucleon-Nucleon Collisions near the Threshold Energy.. ....Hiroshi Fukuda & Gyo Takeda **5** (1950), 800

Effect of Nuclear Binding on Meson Production.................. ....Y. Fujimoto, K. Nishijima, T. Okabayashi, K. Takayanagi & Y. Yamaguchi **5** (1950), 870

On the Negative π-Meson Capture............................. ....K. Aidzu, Y. Fujimoto, H. Fukuda, S. Hayakawa, K. Takayanagi, G. Takeda & Y. Yamaguchi **5** (1950), 931

The Multiple Production of Mesons by High Energy Nucleon-Nucleon Collisions..........Hiroshi Fukuda & Gyo Takeda **5** (1950), 957

On the Production of γ-Ray accompanied with the Absorption of π-Meson by a Proton. I.....Shuzo Ogawa & Eiji Yamada **5** (1950), 977

Photo-Meson Production and Nucleon Isobar (L)................. ....Y. Fujimoto & H. Miyazawa **5** (1950), 1052

On the Absorption of Negative π-Meson by Proton. II (L)......... ....E. Yamada, Y. Nagahara & S. Ogawa **6** (1951), 131

Mesonic Processes in Two-Nucleon System..................... ....Yoichi Fujimoto & Yoshio Yamaguchi **6** (1951), 166

On the Production of Mesons by X-Rays........................ ....Kô Aidzu, Yoichi Fujimoto & Hiroshi Fukuda **6** (1951), 193

On the Absorption of the Negative π-Meson by Deuteron......... ....Shuzo Ogawa, Eiji Yamada & Yukio Nagahara **6** (1951), 227
(*cf.* Errata: Vol. 6, p. 444 L)

13 **π-Mesons, Reactions** *(continued)*

Production of Vector π-Mesons by High Energy Nucleon-Nucleon Collisions (L) .... K. Ida **6** (1951), 258

On the Multiple Production of Mesons (L) .... H. Umezawa, Y. Takahashi & S. Kamefuchi **6** (1951), 428

On the Photo-Meson Production from Heavy Nuclei (L).......... .... S. Machida & T. Tamura **6** (1951), 437

On the Absorption of the Negative π-Meson by Deuteron (L) .... S. Ogawa, E. Yamada & Y. Nagahara **6** (1951), 444
(*Errata for* Vol. 6, p. 227)

On the Production of Negative Protons .... Mituo Taketani & Shigeru Machida **6** (1951), 559

Photo-Meson Production from Deuteron.......................... .... Shigeru Machida & Taro Tamura **6** (1951), 572

The Scattering of Mesons by Nuclear Particles. I................. R. C. Majumdar, A. S. Apte & M. K. Sundaresan **6** (1951), 737

The Phenomenological Analyses of Mesonic Processes .... Y. Yamaguchi **6** (1951), 772

Production of Charged π-Meson by γ-Ray —*Higher Order Corrections*— .... Ziro Koba, Tsuneyuki Kotani & Shinzô Nakai **6** (1951), 849

π°-Meson Production by Gamma-Ray (L) ...... S. Minami **6** (1951), 895

A Note on the Fermi's Theory of Meson Production (L) .... Y. Fujimoto & T. Tamura **6** (1951), 901

Meson-Nucleon Scattering .... Yoichiro Nambu & Yoshio Yamaguchi **6** (1951), 1000

On the *Z*-Dependence of the Positive-Negative Ratio of the Mesons produced by Photons on Nuclei (L) .... S. Machida & T. Tamura **6** (1951), 1030

Neutral-Meson Production by Gamma-Ray .. Shigeo Minami **7** (1952), 69
(*cf.* Errata: Vol. 7, p. 267)

Meson Reactions in Deuterium and Meson-Nucleon Scattering...... .... Yoshio Yamaguchi **7** (1952), 93
(*cf.* Errata: Vol. 7, p. 267)

Meson Production by γ-Rays from Deuterium .... Yosio Saito, Yôiti Watanabe & Yoshio Yamaguchi **7** (1952), 103

13 **π-Mesons, Reactions** *(continued)*

Note on the Statistical Theory of the Meson Shower (L) .... S. Takagi **7** (1952), 123

Excitation Function for Meson Production by γ-Ray .... Shigeo Minami **7** (1952), 535

The Capture Process of π-Mesons by Deuterons .... Yoshio Matsuzaki & Muneo Sasaki **7** (1952), 573

On the Model of *V*-Particle and Meson-Nucleon Scattering (L) .... K. Sawada **7** (1952), 592

Some Remarks on the Photo-Disintegration of Deuteron. I .... Yukio Nagahara & Jun Fujimura **8** (1952), 49

The *S*-Matrix Method in Pion Reactions .... Tadao Nakano & Kazuhiko Nishijima **8** (1952), 53

An Interpretation of the Meso-Disintegration of the Deuteron in terms of the Strong Coupling Meson Theory (L) .... S. Matsuyama & H. Miyazawa **8** (1952), 140

Pion Reactions in One Nucleon System and Nucleon Isobars .... Shigeo Minami, Tadao Nakano, Kazuhiko Nishijima, Hisaichiro Okonogi & Eiji Yamada **8** (1952), 531

π-D Scattering and Strong Coupling Theory (L) .... H. Miyazawa & S. Matsuyama **8** (1952), 573
(*cf.* Errata: Vol. 8, p. 677)

On the π-P Scattering (L) .... K. Ono **8** (1952), 676

Meson Nucleon Scattering (L) .... S. Goto **9** (1953), 91

Photo Positive Pion Production (L) .... M. Takasu, S. Goto, J. Fujimura & R. Kawabe **9** (1953), 92

The Scattering of Gamma-Ray by Nucleon and Nucleon Isobars .... Shigeo Minami **9** (1953), 108

On the Reaction of the Mesonic Proper Field .... Shigeo Goto, Rokuo Kawabe & Masashi Takasu **9** (1953), 312

On the Scattering Problem in Pseudoscalar Meson in Pseudovector Coupling .... Katuro Sawada **9** (1953), 455

On the Pion-Nucleon Scattering (L) .... Y. Miyachi **9** (1953), 469

Meson-Deuteron Reaction and Nucleon Isobars .... Sadahiko Matsuyama & Hironari Miyazawa **9** (1953), 492

13 π-Mesons, Reactions (*continued*)

The π-Nucleon Scattering and the Damping Effect (L) ....
........................K. Hasegawa & S. Azuma **10** (1953), 240

Pion-Nucleon Scattering and Nucleon Isobar ....
..............Akira Kanazawa & Masao Sugawara **10** (1953), 399

Fourth Order Calculations of Meson-Proton Scattering in the Symmetrical Ps(Ps) Theory (L) ....
.....K. Nakabayasi, K. Hasegawa & I. Yamamura **10** (1953), 694

Fourth Order Phase Shifts for Meson-Proton Scattering in the Symmetrical Ps(Ps) Theory (L) ....
.....K. Nakabayasi, K. Hasegawa & I. Yamamura **10** (1953), 696
(*cf.* Errata: Vol. 11. p. 230)

Fermi's Theory of the Generation of Pions and the Partition Theory of Numbers (L)....F. C. Auluck & D. S. Kothari **11** (1954), 120

Note on Meson-Nucleon Interaction (L)......S. Minami **11** (1954), 123
(*cf.* Errata: Vol. 11. p. 230)

An Invariance Theorem for Cross Sections of Meson-Nucleon Scattering............................Shigeo Minami **11** (1954), 213

On the Renormalization of Salpeter-Bethe Kernel of Meson-Nucleon System in the State $T=1/2$ (L)....T. Yoshimura **11** (1954), 224

Kinematical Studies of Pion-Nucleon Interactions (L) ....
........S. Hayakawa, M. Kawaguchi & S. Minami **11** (1954), 332

Renormalization in the Covariant Treatment of Pion-Nucleon Scattering (L)..............................S. Chiba **11** (1954), 494

Covariant Subtraction of "Overlapping Divergences" appearing in the Pion-Nucleon Scattering (L) ....
..........................D. Ito & H. Tanaka **11** (1954), 501

On Fermi's Theory of High Energy Nucleon-Nucleon Collisions (L)
..................................V. S. Nanda **11** (1954), 605

Pion-Nucleon Scattering by Tamm-Dancoff Method (L) ....
.......................K. Ishida & A. Takahashi **11** (1954), 611

Theoretical Analysis of Pion-Nucleon Scattering..................
.... Nobuyuki Fukuda, Shigeo Goto, Susumu Okubo
& Katuro Sawada **12** (1954), 79

13 π-Mesons, Reactions *(continued)*

On the Effective Hamiltonian for Pseudoscalar Meson with Pseudoscalar Coupling with Nucleon .... Tomoya Akiba & Katuro Sawada **12** (1954), 94

On the Variational Solution of Bethe-Salpeter Equation in Pion-Nucleon Scattering (L) .... D. Ito & H. Tanaka **12** (1954), 105

The Effects of Heavy Particles on π-Meson-Proton Scattering .... Shigeaki Hatano, Tadashi Kaneno & Mitsuo Shindo **12** (1954), 167

Meson Production in Meson-Nucleon Collisions (L) .... Y. Miyachi **12** (1954), 243

Kinematical Investigations of Meson-Nucleon Reactions .... Satio Hayakawa, Masaaki Kawaguchi & Shigeo Minami **12** (1954), 355

(*cf.* Errata: Vol. 12. p. 814)

Renormalization in the Covariant of Pion-Nucleon Scattering .... Shin Chiba **12** (1954), 481

Zero-Energy Mesonic Processes and Renormalization in D. T. G.'s Formalism (L) .... S. Chiba & M. Namiki **12** (1954), 693

Zero-Energy Mesonic Processes and Renormalization in Schwinger's Formalism (L) .. M. Namiki, S. Chiba & S. Hanawa **12** (1954), 694

The Cut-off Method in Meson Theory .... Shigeo Goto **12** (1954), 699

Pion-Nucleon Scattering in the Tamm-Dancoff Approximation .... Shin Chiba, Miwae Yamazaki & Nobuyuki Fukuda **12** (1954), 767

On the Relation between Meson-Nucleon Scattering and Photomeson Production .. Masaaki Kawaguchi & Shigeo Minami **12** (1954), 789

On Fermi's Theory of Mulitiple Production (L) .... K. Ono & K. Yokoi **13** (1955), 101

A Tentative Analysis of π-2π Process (L) .... D. Ito & S. Minami **13** (1955), 108

On Double Pion Production in Nucleon-Nucleon Collision (L) .... D. Ito **13** (1955), 123

The *D*-Wave Contribution to Pion-Nucleon Scattering .... Taiji Yamanouchi & Nobuyuki Fukuda **13** (1955), 200

Elastic Production of Neutral Photo-Pions in Helium (L) .... Y. Yamaguchi **13** (1955), 459

13 *π*-Mesons, Reactions (*continued*)

Phenomenological Analysis of Elastic π-p Scattering at 1.4 BeV........................Daisuke Ito & Shigeo Minami **14** (1955), 198

On the Angular Distribution of Double Pion Production in Pion-Nucleon Collisions at 1.4 BeV..Daisuke Ito & Shigeo Minami **14** (1955), 482

Low Energy Limits of Photon-Nucleon and Pion-Nucleon Collisions.........Sigeo Hanawa, Mikio Namiki & Shin Chiba **14** (1955), 551

Meson Reactions in Two-Nucleon System...Shigeo Minami **15** (1956), 12

Interaction of π-Mesons with π-Mesons (L)......Z. Koba **15** (1956), 294

Remarks on the Pion-Pion Interaction..........Ziro Koba **15** (1956), 461

Hydrodynamical Theory of the Multiple Production of Particles in High Energy Nucleon-Nucleus Collision (L)...C. Iso & M. Sato **15** (1956), 510

On the Hydrodynamical Description of the Behaviours of Elementary Particles (L).......................M. Hamaguchi **15** (1956), 588

Meson-Nucleon Scattering in Low Energy Region...................................Daisuke Ito & Shigeo Minami **16** (1956), 548

Note on Models of Multiple Meson Production at Extremely High Energy..............................Ziro Koba **17** (1957), 288

Low's Scattering Equation and S-Matrix..Hideo Fukutome **17** (1957), 383

Pion-Nucleon Scattering and Structure of Fourth-Order Matrix Elements in Ps(Ps) Meson Theory....................................Kugao Nakabayasi & Kazu Hasegawa **17** (1957), 581

Pion-Nucleon Interaction according to the Previous Theory (L)........................O. Hara, Y. Fujii & Y. Ohnuki **17** (1957), 820

Charge Distribution of Pions produced in High Energy Nuclear Collisions.....................Yoshihiro Yamamoto **18** (1957), 81

On the Effective Coupling Strength in the Static Pion Theory (L)...............T. Kobayashi, J. Osada & S. Tani **18** (1957), 89

Numerical Discussions on P-Wave Meson-Nucleon Scattering (L)...........................T. Sawaguri & J. Osada **18** (1957), 91

π-P Interaction in High Energy Region.........................D. Ito, T. Kobayashi, M. Yamazaki & S. Minami **18** (1957), 264

13 π-Mesons, Reactions *(continued)*

On the Production of Mesons in Hydrogen and Carbon above 10 GeV.
II (L)..Y. Watase, S. Mitani, K. Suga & Y. Tanaka **18** (1957), 314

Pion Production in Nucleon-Nucleon Collisions in BeV Range (L)..
.................................T. Kobayashi **18** (1957), 318

Static Model in the Meson Theory......Masao Sugawara **18** (1957), 383

Pion-Nucleon Scattering and the Structure of the Pion............
.............................Shigeru Machida **18** (1957), 467

On the Static Approximation of the γ_5 Meson Theory............
..............................Akira Kanazawa **19** (1958), 330

π-N Interactions in GeV Region..............................
....Yujiro Kakudo, Tetuo Goto & Ryuzo Nakasima **19** (1958), 353

Note on the Strange Particle Effects in S-Wave Pion-Nucleon Scattering (L)........................K. Nakayama **19** (1958), 581

On the Hydrodynamical Theory in Multiple Particle Production (L)
................................M. Hamaguchi **19** (1958), 741

On the Exchange Magnetic Moments.........................
.................Eiichi Kuroboshi & Yasuo Hara **20** (1958), 163

On the Radiative Corrections to the Scattering of Mesons in an External Electromagnetic Field (L)......................
......................A. K. Bhatia & J. Sucher **20** (1958), 397

Meson-Meson Interaction (L)..K. Igi & K. Kawarabayashi **20** (1958), 576

On the Absorptive Range in the Pion-Nucleon Collision at High Energies (L)........................K. Ishida **20** (1958), 774

The Dispersion Relation and the Pion-Nucleon Interaction Cross Section at Very High Energies...........................
Tetsuro Sakuma, Shinya Furui & Akira Kanazawa **20** (1958), 835

Meson Production in Meson-Nucleon Interaction................
.................................S. K. Kundu **20** (1958), 939

Remarks on the Nuclear Disintegration by Meson Capture.........
......Yoichi Fujimoto, Satio Hayakawa & Yoshio Yamaguchi
Sup. 1 (1955), 231

Nuclear Disintegration by π-Meson Capture.....................
......Yoichi Fujimoto, Satio Hayakawa & Yoshio Yamaguchi
Sup. 1 (1955), 232

13 π-Mesons Reactions *(continued)*

Bemerkung über die Streuung der Mesotronen am Kernteilchen........................Sin-itiro Tomonaga **Sup. 2** (1955), 68

Phenomenological Theory of Pion-Nucleon Reactions..................Satio Hayakawa, Masaaki Kawaguchi & Shigeo Minami **Sup. 5** (1958), 41

14 Electromagnetic Properties of Nucleons

Magnetic Moment and Virtual Dissociation of Nuclear Particle.....................................Gentaro Araki **1** (1946), 1

On the Electromagnetic Properties of Nucleons. I..................................Minoru Kobayasi & Eizô Kanai **1** (1946), 21

On the Modification of the Hamiltonian of a Nuclear Particle due to Its Virtual Dissociation (L)..............G. Araki **2** (1947), 89

On the Electromagnetic Properties of Nucleons. II....................Eizô Kanai, Minoru Kobayasi & Shigeo Kokaji **2** (1947), 151

On the Electromagnetic Properties of Nucleons. III..................................Eizô Kanai & Minoru Kobayasi **2** (1947), 179

Magnetic Moment of Nucleon (L)...........K. Sawada **4** (1949), 383

On the Magnetic Moment of Nucleon.....Katuro Sawada **4** (1949), 532

On the Electromagnetic Properties of Nucleons (L)........................M. Taketani, S. Machida & T. Tamura **5** (1950), 150

Anomalous Magnetic Moment of the Nucleon (L)..E. Yamada **5** (1950), 312

On the Anomalous Magnetic Moment of Nucleon in Vector and Pseudovector Meson Theory (L)..S. Hori & K. Sawada **5** (1950), 333

Radiative Corrections to Anomalous Magnetic Moment of Nucleon in Pseudoscalar Meson Theory (L)..K. Nakabayasi & I. Sato **6** (1951), 252
(*cf.* Errata: Vol. 12, p. 250 L)

Meson Current around the Nucleon (L)....Y. Takahashi **6** (1951), 624

Phenomenological Explanation of Magnetic Moments of Nucleons in terms of the Excited States of Nucleons...Masao Sugawara **8** (1952), 549

14 Electromagnetic Properties of Nucleons *(continued)*

Anomalous Magnetic Moment of Nucleon and Nucleon Isobar……………Akira Kanazawa & Masao Sugawara **11** (1954), 231

A Remark on Neutron-Proton Mass Difference (L)……………Y. Oishi & H. Katsumori **12** (1954), 109

A Note on Photon-Nucleon Scattering (L)…Y. Yamaguchi **12** (1954), 111

Effect of the Pauli Moment on the γ-Decay of Neutral Meson (L)……………H. Katsumori **12** (1954), 241

Radiative Corrections to the Anomalous Magnetic Moment of the Nucleon in Pseudoscalar Meson Theory (L)……………K. Nakabayasi, I. Sato & T. Akiba **12** (1954), 250
(*Errata for* Vol. 6, p. 252)

On the Analysis of the Anomalous Magnetic Moment of the Nucleon in the Second Order Calculations (L)……………K. Hasegawa, S. Matsuyama & T. Akiba **12** (1954), 548

A Classical Treatment of the Scattering of Electromagnetic Waves by Nucleons (L)……………I. Sato & Y. Ichikawa **12** (1954), 812

On the Electron-Neutron Interaction (L)……M. Yamada **13** (1955), 124

A Note on the Static Approximation of the Nucleon Anomalous Magnetic Moment (L)……………A. Kanazawa **14** (1955), 397

Nucleon Magnetic Moments in Ps-Ps Intermediate Coupling Meson Theory……Akira Kanazawa & Masao Sugawara **16** (1956), 95

On the Effects of Heavy Unstable Particles to the Anomalous Magnetic Moments of Nucleons (L)…C. Iso & S. Iwao **16** (1956), 417

Electromagnetic Properties of Deuteron. II……………Kiyomi Itabashi **17** (1957), 80

Electron-Neutron Interaction (L)..F. Ando & H. Miyazawa **17** (1957), 607

On the Annihilation Cross Section of the Antinucleon and the Nucleon (L)……………Y. Yamaguchi **17** (1957), 612

The Photon-Nucleon Scattering……………Shigeo Minami & Yoshio Yamaguchi **17** (1957), 651

Some Considerations on the High-Energy Electron-Proton Scattering and the Nucleon Mass Difference……………Kichiro Hiida & Makoto Sawamura **18** (1957), 451

14 Electromagnetic Properties of Nucleons *(continued)*

Analysis of Neutron-Electron Interaction in the Relativistic Perturbation Theory .... Kin-ichi Ishida **18** (1957), 493

The Dispersion Relations for the Scattering of Photons from Proton .... Tomoya Akiba & Iwao Sato **19** (1958), 93

Electromagnetic Properties of Nucleons .... Akira Kanazawa, Shinya Furui & Tetsuro Sakuma **20** (1958), 149

Effects of Virtual Nucleon Pairs to the Electromagnetic Structure of the Nucleon .... Shigeo Goto & Shigeru Machida **20** (1958), 216

A Remark on the Anomalous Magnetic Moment in the Static Model (L) .... Y. Hara & K. Kawarabayashi **20** (1958), 252

Anomalous Magnetic Moment of the Nucleon .... Eiji Yamada **Sup. 5** (1958), 1

Pion Theory of the Anomalous Magnetic Moment of the Nucleon .... Hiroichi Hasegawa **Sup. 5** (1958), 17

Some Feasible Tests of Quantum Electrodynamics at Small Distances .... Steven C. Frautschi **Sup. 8** (1958), 21

15 Nuclear Forces and Deuteron Problems, Meson Theoretical

On the Meson Pair Theory of Nuclear Forces. I .... Susumu Noma **1** (1946), 71

On the Meson Pair Theory of Nuclear Forces. II .... Susumu Noma **3** (1948), 54

On the Meson Pair Theory of Nuclear Forces. III (A) .... H. Enatsu & S. Noma **3** (1948), 215

On the Meson Pair Theory of Nuclear Forces. IV (A) .... S. Noma & S. Hiroishi **3** (1948), 216

On the Theory of Nuclear Force (L) .... M. Sugawara **3** (1948), 442

On the Meson Theory of Nuclear Forces... Gentaro Araki **4** (1949), 193

Note on the Deuteron Problem of the Mixed Meson Theory of Pseudovector and Pseudoscalar Fields (L) .... S. Hiroishi & H. Tanaka **4** (1949), 231

On the Nuclear Forces (L) .... H. Enatsu **4** (1949), 572

On the Nuclear Forces .... Hiroshi Enatsu **5** (1950), 102

15 Nuclear Forces and Deuteron Problems, Meson Theoretical *(continued)*

On the Concept of the Nuclear Potential (L) .... K. Baba, D. Ito, T. Miyazima & M. Sasaki **5** (1950), 159
(*cf.* Errata: Vol. 5, p. 339)

Nonsingular Tensor Force in Pseudoscalar Meson Theory (L) .... S. Endo & S. Tani **5** (1950), 310

Derivation of the Interaction Potential from Field Theory (L) .... Y. Nambu **5** (1950), 321

Ground State of Deuteron according to Pseudoscalar Meson Theory (L) .... G. Araki & Y. Mori **5** (1950), 505

Meson Fields and Nuclear Forces .... L. Rosenfeld **5** (1950), 519

The Yukawa Theory of Nuclear Forces in the light of Present Quantum Theory of Wave Fields ... W. Heisenberg **5** (1950), 523

Nuclear Saturation Phenomena deducible from Pair Theories .... Gregor Wentzel **5** (1950), 584

Force Potentials in Quantum Field Theory .... Yoichiro Nambu **5** (1950), 614

Remarks on Bethe's Neutral Theory of Nuclear Force .... Masao Sugawara **5** (1950), 920

Pseudoscalar Meson Theory and Ground State of Deuteron .... Gentaro Araki & Yukio Mori **6** (1951), 188

On the Nuclear Potential in the Meson Theory (L) .... Y. Ataka **6** (1951), 256

Effect of Nucleon Recoil on Nuclear Forces .... Gentaro Araki **6** (1951), 379

On the Method of the Theory of Nuclear Forces .... Mituo Taketani, Seitaro Nakamura & Muneo Sasaki **6** (1951), 581

On the Exchange Current (L) .... Y. Ataka **6** (1951), 627

On the Nuclear Forces and the Ground State of Deuteron (L) .... M. Taketani, S. Ohnuma & S. Koide **6** (1951), 635

Meson Theory of Nuclear Forces (L) .... M. Taketani, S. Machida & S. Ohnuma **6** (1951), 638

Deviations of Nuclear Magnetic Moments from the Schmidt Lines .... Hironari Miyazawa **6** (1951), 801

15 Nuclear Forces and Deuteron Problems, Meson Theoretical (*continued*)

On the Adiabatic Nuclear Potential. I .... Kazuhiko Nishijima **6** (1951), 815

On the Fourth-Order Nuclear Potential (L) .... S. Machida, S. Ohnuma & M. Taketani **6** (1951), 904

On the Adiabatic Nuclear Potential. II .... Kazuhiko Nishijima **6** (1951), 911

Divergences arising from Nuclear Forces (L) .... T. Nakano & K. Nishijima **6** (1951), 1024

The Meson Theory of Nuclear Forces. I——*The Deuteron Ground State and Low Energy Neutron-Proton Scattering*—— .... Mituo Taketani, Shigeru Machida & Shoroku Ohnuma **7** (1952), 45

Remarks on the Adiabatic Nuclear Potential .... Shigeru Machida & Kazuhiko Nishijima **7** (1952), 57

Non-Additivity of Nucleon Magnetic Monent in the Deuteron .... Hironari Miyazawa **7** (1952), 207

Remarks on Lèvy's Fourth Order Potential (L) .... T. Hamada & M. Sugawara **9** (1953), 555

On the Effects of Excited States of Nucleons upon Static Nuclear Potential in Symmetrical Pseudoscalar Meson Theory. I ——*Derivation of Nuclear Potential and Qualitative Conclusions*— .... Tokuji Matsumoto, Tetsuo Hamada & Masao Sugawara **10** (1953), 199

On the Nuclear Saturation .... Shuzo Ogawa & Toshio Marumori **10** (1953), 265

Nuclear Forces in Pseudoscalar Meson Theory .. Iwao Sato **10** (1953), 323

On the Many-Body Problem in the Intermediate Coupling Theory. I .... Takao Tati **10** (1953), 421

Note on the Meson Theory of Nuclear Force (L) .... S. Fujii, J. Iwadare, S. Otsuki, M. Taketani, S. Tani & W. Watari **10** (1953), 478

The Meson Theory of Nuclear Forces. II——*High Energy Nucleon-Nucleon Scattering*—— .... S. Fujii, J. Iwadare, S. Otsuki, M. Taketani, S. Tani & W. Watari **11** (1954), 11

15 Nuclear Forces and Deuteron Problems, Meson Theoretical *(continued)*

The Effect of the Mass Difference between Charged and Neutral Pions on the Nuclear Force (L) ....A. Sugie **11** (1954), 333

Electromagnetic Properties of Deuteron (L) ....I. Sato & K. Itabashi **12** (1954), 100

Diagonalisation of Hamiltonian (L) ....S. Okubo **12** (1954), 102

Reformulation of Brueckner-Watson Method by means of Canonical Transformations (L) ....S. Tani **12** (1954), 104

On the Construction of Potential in Field Theory.......... Nobuyuki Fukuda, Katuro Sawada & Mituo Taketani **12** (1954), 156

Phenomenological Analysis of the Meson Theory of Nuclear Force.........Shoichiro Otsuki & Saburo Fujii **12** (1954), 521

A Remark on Tamm-Dancoff Approximation (L) ....T. Okabayashi **12** (1954), 545

On the Multiple Scattering Phase Shifts and the Nuclear Force ——*Scalar Pair Theory*—— (L) ....K. Hasegawa & S. Azuma **12** (1954), 546

On the Effects of Excited States of Nucleons upon Static Nuclear Potential in Symmetrical Pseudoscalar Meson Theory. II ——*Numerical Results on Deuteron Problem*—— ....Tokuji Matsumoto & Masao Sugawara **12** (1954), 553

Diagonalisation of Hamiltonian and Tamm-Dancoff Equation..........Susumu Okubo **12** (1954), 603

Meson Theoretical Potentials in Triplet Odd State (L)..........S. Otsuki & R. Tamagaki **12** (1954), 806

Spin-Orbit Coupling in the Pseudoscalar Meson Theory of Nuclear Forces..........Gentaro Araki **13** (1955), 13

Intermediate Coupling Meson Theory of Nuclear Forces. I——*General Formulation*—— ....Hiroichi Hasegawa **13** (1955), 47

Derivation of the Value of the Coupling Constant g from the Rest Energy of the Nucleon..........Ferdinand Cap **13** (1955), 62

Recoil Correction to the Adiabatic Nuclear Potential (L) .... M. Shindo & K. Nishijima **13** (1955), 103

Potential in Quantum Field Theory....Tsutomu Imamura **13** (1955), 183
(*cf.* Errata: Vol. 14, p. 265)

15 **Nuclear Forces and Deuteron Problems, Meson Theoretical** (*continued*)

Nonadiabatic Treatment of Nuclear Forces. I —*Static Limits*—
.... Junji Iwadare **13** (1955), 189

Nonstatic Corrections to the Fourth Order Nuclear Forces (L).....
.... J. Iwadare **13** (1955), 218

Electromagnetic Properties of Deuteron..........................
....................Iwao Sato & Kiyomi Itabashi **13** (1955), 341

Multiple Scattering Phase Shifts and Nuclear Potential...........
................Kazu Hasegawa & Shûkô Azuma **13** (1955), 360

On Higher Order Corrections in the Meson Theory of Nuclear Forces
..................Shigeru Machida & Kei Senba **13** (1955), 389

Recoil Effect and Spin-Orbit Coupling (L) ....S. Satô **13** (1955), 457

Nonadiabatic Treatment of Nuclear Forces. II—*Nonstatic Corrections*— .... Junji Iwadare **14** (1955), 16

On the Meson-Theoretical Potentials.........................
.............Shoichiro Otsuki & Ryozo Tamagaki **14** (1955), 52

Magnetic Exchange Moment to Order eg^4 in Adiabatic Approximation (L) ....S. Hatano **14** (1955), 170

On the Recoil Correction to Adiabatic Nuclear Potential..........
........Iwao Sato, Kiyomi Itabashi & Shinji Satô **14** (1955), 303

The Relativistic and Exchange Current Corrections to the Deuteron Magnetic Moment and the Thermal N-P Capture Cross Section
...............................Masao Sugawara **14** (1955), 535

Meson-Theoretical Potentials in N^{14} (L) ....
..............S. Otsuki, T. Sawada & S. Suekane **14** (1955), 606

On the Exchange Magnetic Moment of the Two Nucleon System...
..............Shigeaki Hatano & Tadashi Kaneno **15** (1956), 63

The Photodisintegration of Deuteron at High Energy (L).........
.........D. Ito, M. Ono, T. Kato & Y. Takahashi **15** (1956), 74

Determination of the Pion Coupling Constant in Nuclear Forces (L)
..J. Iwadare, S. Otsuki, R. Tamagaki & W. Watari **15** (1956), 86

Pion Theory of Nuclear Forces...............K. Inoue, S. Machida,
M. Taketani & T. Toyoda **15** (1956), 122

Intermediate Coupling Meson Theory of Nuclear Forces. II........
...........Yukihisa Nogami & Hiroichi Hasegawa **15** (1956), 137

15 Nuclear Forces and Deuteron Problems, Meson Theoretical *(continued)*

Interaction of Antinucleons in Matter. I (L) ......
...... J. Iwadare & S. Hatano **15** (1956), 185

On the One Pion Exchange Potential ......
...Kichiro Hiida, Junji Iwadare & Shigeru Machida **15** (1956), 189

Deuteron Photodisintegration at High Energies ......
...... Ryozi Suzuki **15** (1956), 536

The Range of the Interaction between Different Fermions ......
...... Michiji Konuma **16** (1956), 259

Two-Nucleon Problem with Pion Theoretical Potential. I——*Determination of Coupling Constant and Deuteron Problem*——
..J. Iwadare, S. Otsuki, R. Tamagaki & W. Watari **16** (1956), 455

Two-Nucleon Problem with Pion Theoretical Potential. II——*Singlet Even State*—— ......
..J. Iwadare, S. Otsuki, R. Tamagaki & W. Watari **16** (1956), 472

Two-Nucleon Problem with Pion Theoretical Potential. III ——*p-p Scattering at 18.2 MeV*—— ......
..J. Iwadare, S. Otsuki, R. Tamagaki & W. Watari **16** (1956), 604

Two-Nucleon Problem with Pion Theoretical Potential. IV——*Photodisintegration of Deuteron at 20 MeV*—— ....J. Iwadare,
S. Otsuki, M. Sano, S. Takagi & W. Watari **16** (1956), 658

Pion Theory of Three-Body Forces ......
...... Jun-ichi Fujita & Hironari Miyazawa **17** (1957), 360

Spin-Orbit Coupling in Heavy Nuclei ......
...... Jun-ichi Fujita & Hironari Miyazawa **17** (1957), 366

Covariant Solutions of the Bethe-Salpeter Equation ......
...... H. S. Green & S. N. Biswas **18** (1957), 121

Dispersion Relations in Nucleon-Nucleon Scattering (L) ......
...... S. Matsuyama & H. Miyazawa **18** (1957), 328

Two-Pion-Exchange Nuclear Potential ......
.....Michiji Konuma, Hironari Miyazawa & Shoichiro Otsuki
19 (1958), 17

On the Applicability of the Pion-Theoretical Nuclear Potential (L)
...... S. Otsuki, R. Tamagaki & W. Watari **19** (1958), 217

15 Nuclear Forces and Deuteron Problems, Meson Theoretical (*continued*)

Dispersion Relations in Nucleon-Nucleon Scattering ....
.......Sadahiko Matsuyama & Hironari Miyazawa **19** (1958), 517
(*cf.* Errata: Vol. 20, p. 983)

Proton-Proton Scattering and Pion Theory of Nuclear Forces.......
..............................Shoichiro Otsuki **20** (1958), 171

Neutron-Proton Scattering and Pion Theory of Nuclear Forces......
.... Wataro Watari **20** (1958), 181

On the Concept of Potential in Quantum Field Theory............
..............................Abraham Klein **20** (1958), 257

Tensor and Spin-Orbit Forces in Nucleon-Nucleon Scattering.......
.... Ryozo Tamagaki **20** (1958), 505

Derivation of the Two Nucleon Potential.......................
...........Abraham Klein & Bruce H. McCormick **20** (1958), 876

On the Mesotron Theory of Nuclear Forces ....
..... Tatuoki Miyazima & Sin-itiro Tomonaga **Sup. 2** (1955), 82

Development of Pion Theory of Nuclear Forces ......Junji Iwadare
Shoichiro Otsuki, Ryozo Tamagaki, Shigeru Machida,
Toshiyuki Toyoda & Wataro Watari **Sup. 3** (1956), 13

Verification of Pion Theory of Nuclear Forces ....
........Junji Iwadare, Shoichiro Otsuki, Ryozo Tamagaki &
Wataro Watari **Sup. 3** (1956), 32
(*cf.* Errata: Sup. 5, p. 123)

Construction of Nuclear Potential from Pion Theory..............
........Shigeru Machida & Toshiyuki Toyoda **Sup. 3** (1956), 106

Definition of Nuclear Potential...Kazuhiko Nishijima **Sup. 3** (1956), 138

On the Method of the Theory of Nuclear Forces ....
.........Mituo Taketani, Seitaro Nakamura & Muneo Sasaki
Sup. 3 (1956), 169

16 Heavy Mesons and Hyperons (see also Elementary Particle Interactions)

On the Nature of τ-Meson (L)..............................
.... H. Fukuda, S. Hayakawa & Y. Miyamoto 4 (1949), 388

On the Decay on Heavy Mesons. I——*On Pauli's Regulator in the Calculation of Meson Decay Problems*——...............
.... Shoji Ozaki, Sadao Oneda & Seibun Sasaki 4 (1949), 524

16 Heavy Mesons and Hyperons *(continued)*

The Another τ-Meson (L) . . S. Hayakawa & Y. Yamaguchi **4** (1949), 570

On the Decay of Heavy Mesons. II ——*Case of the Symmetrical Interaction*—— . . . . Seibun Sasaki, Sadao Oneda & Shoji Ozaki **5** (1950), 25

Note on Varitrons (L) . . . . S. Hayakawa **5** (1950), 145

The Decay of a $\tau^{\pm}$ Meson into $\pi^{\pm}$ and π^{0} Meson (L) . . . . H. Fukuda & Y. Miyamoto **5** (1950), 147

The Decay of a $\tau^{\pm}$ Meson into a $\pi^{\pm}$ Meson and a Photon (L) . . . . H. Fukuda & Y. Miyamoto **5** (1950), 148

On the Decay of Heavy Mesons. III——*Case of the Unsymmetrical Interaction*—— . . . . Sadao Oneda, Seibun Sasaki & Shoji Ozaki **5** (1950), 165

On the Nature of τ-Mesons. I . . . . Hiroshi Fukuda, Satio Hayakawa & Yoneji Miyamoto **5** (1950), 283

On the Decay of a Heavy Meson into Lighter Mesons (L) . . . . S. Ozaki, S. Oneda & S. Sasaki **5** (1950), 305

On the Nature of τ-Mesons. II . . . . Hiroshi Fukuda, Satio Hayakawa & Yoneji Miyamoto **5** (1950), 352

On the Decay of Heavy Meson into Lighter Mesons . . . . Shoji Ozaki **5** (1950), 373

On the Decay of a Heavy Dirac Meson . . . . Hiroshi Fukuda & Satio Hayakawa **5** (1950), 993

On the Nature of *V*-Particles. I (L) . . . . Y. Nambu, K. Nishijima & Y. Yamaguchi **6** (1951), 615

On the Nature of *V*-Particles. II (L) . . . . Y. Nambu, K. Nishijima & Y. Yamaguchi **6** (1951), 619

On a Possible Mode of the *V*-Particle (L) . . . . K. Aidzu & T. Kinoshita **6** (1951), 630

A Model for *V*-Particles (L) . . . . H. Miyazawa **6** (1951), 631

Note on the Theory of *V*-Particles and τ-Mesons (L) . . . . S. Oneda **6** (1951), 633

V-Particle as a Composite One (L) . . . . H. Suura **6** (1951), 893

V-Particles and Nuclear Phenomena (L) . . . . S. Oneda **6** (1951), 1014

16 Heavy Mesons and Hyperons *(continued)*

On the Model of V-Particle and Meson-Nucleon Scattering (L) .... K. Sawada **7** (1952), 592

An Empirical Mass Spectrum of Elementary Particles (L) .... Y. Nambu **7** (1952), 595

Note on the Structure of the Interactions between Unstable Elementary Particles (L) .... S. Oneda **8** (1952), 255

Selection Rules for Decays of π-Mesons and V-Particles .... Tetsuo Hamada & Masao Sugawara **8** (1952), 363

Note on the Law of Conservation of Heavy Particles (L) .... S. Oneda **8** (1952), 568

On the κ-Meson (L) .... K. Inoue **9** (1953), 323

Models of V-Particles .... Kazuhiko Nishijima **9** (1953), 414

The Theory of V-Particles .... Ken-ichi Ono **9** (1953), 524

New Proposal on the Mass Spectrum of Elementary Particles (L) .... S. Yoshikawa & T. Hasebe **10** (1953), 359

On the Baryon-Meson-Photon System .... A. Pais **10** (1953), 457

Charge Independence for V-Particles (L) .... T. Nakano & K. Nishijima **10** (1953), 581

A Tentative Theory of Λ-Particles——*Theory of 4-Dimensional τ-Space*——....... Tadao Nakano & Ryoyu Utiyama **11** (1954), 411

Further Comments on the Proposed Mass Spectrum (L) .... S. Yoshikawa & T. Hasebe **11** (1954), 496

On the κ-μ Decay-in-Flight in the Photographic Emulsion exposed at High Altitude (L) .... K. Niu **11** (1954), 499

Some Remarks on the Even-Odd Rule (L) .. K. Nishijima **12** (1954), 107

The Effects of Heavy Particles on π-Meson-Proton Scattering .... Shigeaki Hatano, Tadashi Kaneno & Mitsuo Shindo **12** (1954), 167

Notes on the Unstable Particles (L) .... S. Ogawa, B. Sakita & Y. Taguchi **12** (1954), 691

On the Interaction of V-Particles (L) .... S. Iwao **13** (1955), 111

Charge Independence Theory of V-Particles .... Kazuhiko Nishijima **13** (1955), 285

On Bound Λ^0-Particles .... Ken-ichi Ono **13** (1955), 522

16 Heavy Mesons and Hyperons *(continued)*

Some Remarks on the Reaction $K + d \rightleftarrows \Sigma^- + p$ .... Kazuhiko Nishijima **14** (1955), 523

On the Interaction between Hyperons and Nucleons and the Hyperfragments .... Kazuhiko Nishijima **14** (1955), 527

Note on the Decay Interactions of Hyperons and Heavy Mesons (L) .... M. Kawaguchi & K. Nishijima **15** (1956), 180
(*cf.* Errata: Vol. 15, p. 419)

Note on the Decays of Σ Particles (L) .... M. Kawaguchi & K. Nishijima **15** (1956), 182

Interaction of Antinucleons in Matter. I (L) .... J. Iwadare & S. Hatano **15** (1956), 185

Interaction of K^+-Meson and Nucleon (L) ..... S. Minami **16** (1956), 66

Note on the Decay Interactions of Hyperons and Heavy Mesons .... Chikashi Iso & Masaaki Kawaguchi **16** (1956), 177

On the Determination of the Spins of Λ^0 and θ^0 Particles .... Shoichi Hori **16** (1956), 189

Note on the Decay of Ξ Particles (L) .... S. Hatano **16** (1956), 248

The Range of the Interaction between Different Fermions .... Michiji Konuma **16** (1956), 259

On the Effects of Heavy Unstable Particles to the Anomalous Magnetic Moments of Nucleons (L) .... C. Iso & S. Iwao **16** (1956), 417

K-π Interactions and K^+-N Scattering (L) ..... S. Minami **17** (1957), 508

Mass Difference of Σ^+, Σ^- and Σ^0 Hyperons .... Hiroshi Katsumori **17** (1957), 803

Some Remarks on the Charged Mesic Decay of ${}^3\mathrm{H}_\Lambda$ (L) .... T. Ogimoto & Y. Yamaguchi **17** (1957), 817

The Production Ratio of K^+ to K^- Mesons (L) .... Y. Kakudo & K. Kobayakawa **17** (1957), 823

Parity Nonconservation and Decay of Hyperon .... Shigeo Minami & Yoshio Yamaguchi **18** (1957), 39

Some Remarks on the Goldhaber Model for Strange Particles (L) .... R. Kawabe **18** (1957), 96

16 Heavy Mesons and Hyperons (*continued*)

Ratio of Hyperons produced by Cosmic Rays (L) .... S. H. Hsieh **18** (1957), 209

On the Observability of a New Hyperon (L) .... S. H. Hsieh **18** (1957), 211

On the Heavy Meson Production in the π^--Proton Reaction (L) .... T. Ogimoto & T. Shimizu **18** (1957), 213

Anomalous Magnetic Moments of Hyperons and Mirror Theorem .... Hiroshi Katsumori **18** (1957), 375

Spin and Size of Λ^0 Particle (L) .... K. Nishimura **18** (1957), 665

Dispersion Relation for the Photoproduction of K-Mesons .... Susumu Okubo **19** (1958), 43

On the Decay Interactions of Strange Particles .... Yoshihiko Miyachi **19** (1958), 112

Invariants in $K_{\mu 3}$ and K_{e3} Decays .... R. Gatto **19** (1958), 146

Dispersion Relations for K Meson-Nucleon Scattering .... Keiji Igi **19** (1958), 238

Mass Levels and Relative Parities of Baryons (L) .... H. Katsumori **19** (1958), 342

Parity-Nonconservation and the Spins of the Strange Particles .... Kiyomi Itabashi **19** (1958), 359

Phenomenological Analysis of the Decay Processes of the Σ- and Λ-Hyperons .... Yoshio Yamaguchi **19** (1958), 485

Note on the Strange Particle Effects in S-Wave Pion-Nucleon Scattering (L) .... K. Nakayama **19** (1958), 581

Isotopic Spin and Strange Particles .... Gyo Takeda **19** (1958), 631

On the $|\Delta I|=1/2$ Rule for the Decay of Σ (L) .... K. Itabashi **19** (1958), 747

The Global Symmetry of Pion-Baryon Interactions and Bound States of Hyperon-Nucleon System (L) .... Y. Yamaguchi **20** (1958), 112

Global Symmetry and the Branching Ratios for the K Capture by the Nucleon .... Ken Kawarabayashi **20** (1958), 117

Isotopic Spin Selection Rule in Σ-Decays .... Tetsuo Eguchi & Shozo Nagata **20** (1958), 144

16 Heavy Mesons and Hyperons *(continued)*

Coupling Constant of Kaon-Baryon Interaction. I (L) ....
........A. Komatsuzawa, R. Sugano & Y. Nogami **20** (1958), 246

Coupling Constant of Kaon-Baryon Interaction. II (L) ....
........A. Komatsuzawa, R. Sugano & Y. Nogami **20** (1958), 249

Dispersion Relation for *K* Meson-Nucleon Scattering and Its Application................................ Keiji Igi **20** (1958), 403

Baryon Mass Spectrum (L) ....
.... H. Katsumori & K. Shimoura **20** (1958), 578

New Interpretation on Hyperonic Charge and Its Generalization to Leptons...................... Takao Okabayashi **20** (1958), 583

Conservation Laws in the Isotopic Spin Space and Their Violation by the Electromagnetic Interaction..........................
...............Masaaki Kato & Gyo Takeda **Sup. 7** (1958), 35

31 Nuclear Forces and Deuteron Problems, Phenomenological (see also Nuclear Forces and Deuteron Problems, Meson Theoretical)

On the Photo-Disintegration of the Deuteron——*Pseudoscalar Meson Theory*——(L)..........H. Enatsu & Y. Takano **4** (1949), 375

Note on the High Energy Neutron-Proton Scattering (L) ....
......................S. Hiroishi & H. Tanaka **5** (1950), 134

On Tensor Forces and Saturation Requirements ....
.... Hideo Kanazawa **6** (1951), 126

Remarks on the Neutron-Proton Scattering with Tensor Force (L)
..............................Y. Yamaguchi **6** (1951), 439

Effects of Tensor Forces on the Elastic Scattering of Neutrons by Deuterons (L)..........H. Horie, T. Tamura & S. Yoshida
6 (1951), 623

Nuclear Cross Sections for Fast Neutrons and Interaction between High Energy Nucleons................Kojiro Ida **7** (1952), 269

Note on the Saturation Properties of Nuclear Forces (L) ....
.... S. Endo & H. Kanazawa **8** (1952), 252

Effects of Tensor Forces on the Neutron-Deuteron Scattering ......
.....Hisashi Horie, Taro Tamura & Shiro Yoshida **8** (1952), 341

31 Nuclear Forces and Deuteron Problems, Phenomenological *(continued)*

Photodisintegration of the Deuterons at High Energies ....
.... Muneo Sasaki **8** (1952), 557
(*cf.* Errata: Vol. 9, p. 96)

Note on the Tensor Interaction in Triplet Odd States (L) ....
.... S. Ohnuma **8** (1952), 576

Charge Independence of Nuclear Interaction and High Energy Nucleon-Nucleon Scattering (L) .... J. Iwadare **9** (1953), 93

The Effect of the Excited States of Nucleons in High Energy Nucleon-Nucleon Scattering (L) .... J. Iwadare **9** (1953), 94

Some Remarks on the Photodisintegration of Deuteron. II ....
.... Jun Fujimura **9** (1953), 132

On the Proton-Neutron Interaction (L) ....
.... T. Komoda & M. Sasaki **9** (1953), 468

On the *D* State Probability of Deuteron (L) ....
.... S. Machida **9** (1953), 683

Angular Distribution of the Deuteron Photodisintegration at Moderate Energies (L) .... A. Sugie & S. Yoshida **10** (1953), 236

Nucleon Scattering by a Potential ....
.... Masahiko Matsumoto & Wataro Watari **11** (1954), 63

Nucleon Isobars and Nuclear Forces in Low Energy Region (L) ...
.... T. Kikuta **11** (1954), 118

A Variation Principle in Deuteron Problem (L) ....
.... T. Kikuta **11** (1954), 493

On Nuclear Force for $^3S_1+{}^3D_1$ State ....
.... Masahiko Matsumoto & Wataro Watari **12** (1954), 503

The Properties of the Meson Theoretical Potentials in Li^6 ....
Shoichiro Otsuki, Taturo Sawada & Shota Suekane **13** (1955), 79
(*cf.* Errata: Vol. 14, p. 610)

Formula for Differential Cross Section in Nucleon-Nucleon Scattering (L) .... M. Matsumoto **13** (1955), 329

Meson-Theoretical Potentials in N^{14} (L) ....
.... S. Otsuki, T. Sawada & S. Suekane **14** (1955), 606

Extensions of Variational Methods. II——*Two Parameter Eigenvalue Problem for the Deuteron State*—— ....
.... Takashi Kikuta **15** (1956), 50

31 Nuclear Forces and Deuteron Problems, Phenomenological *(continued)*

Nature of Nuclear Force indicated by the Photodisintegration of the Deuteron. I (L)......S. H. Hsieh & M. Nakagawa **15** (1956), 79

Effect of Hard Core on the Binding Energies of H^3 and He^3. I..... ....Takashi Kikuta, Masato Morita & Masami Yamada **15** (1956), 222

Nature of Nuclear Forces indicated by the Photodisintegration of the Deuteron. II (L)....................S. H. Hsieh **16** (1956), 68

On the Energy Matrix of the Tensor Forces (L).................. ....T. Sasakawa **16** (1956), 256

(*cf.* Errata: Vol 17. p. 825

Two-Nuclon Problem with Pion Theoretical Potential. I——*Determination of Coupling Constant and Deuteron Problem*—— ....J. Iwadare, S. Otsuki, R. Tamagaki & W. Watari **16** (1956), 455

Two-Nucleon Problem with Pion Theoretical Potential. II——*Singlet Even State*——......................J. Iwadare, S. Otsuki, R. Tamagaki & W. Watari **16** (1956), 472

Two-Nucleon Problem with Pion Theoretical Potential. III——*p-p Scattering at 18.2 MeV*——.........J. Iwadare, S. Otsuki, R. Tamagaki & W. Watari **16** (1956), 604

Two-Nucleon Problem with Pion Theoretical Potential. IV——*Photodisintegration of Deuteron at 20 MeV*——.............. .....J. Iwadare, S. Otsuki, M. Sano, S. Takagi & W. Watari **16** (1956), 658

Effect of Hard Cores on the Binding Energies of H^3 and He^3. II... .... Takashi Ohmura, Masato Morita & Masami Yamada **17** (1957), 326

Saturation of Nuclear Forces...........Neutron Proton Scattering .... A. B. Bhatia & S. M. Shah **17** (1957), 561

Photodisintegration of the Deuteron near 11 MeV ....Shih-Hui Hsieh **18** (1957), 637

On Puppi's Determination of the Pion-Nucleon Coupling Constant (L) ......K. Matsumoto, S. Otsuki, H. Shimodaira & E. Yamada **19** (1958), 216

31 Nuclear Forces and Deuteron Problems, Phenomenological *(continued)*

On the Applicability of the Pion-Theoretical Nuclear Potential (L)
............S. Otsuki, R. Tamagaki & W. Watari **19** (1958), 217

Natures of Nuclear Forces indicated by the Photodisintegration of the
Deuteron. III (L)....................S. H. Hsieh **19** (1958), 453

A Note on the Specification of Nuclear Potentials (L) ....
.... T. Hamada **20** (1958), 114

Tensor and Spin-Orbit Forces in Nucleon-Nucleon Scattering ....
.... Ryozo Tamagaki **20** (1958), 505

Development of Pion Theory of Nuclear Forces..................
J. Iwadare, S. Otsuki, R. Tamagaki, S. Machida, T. Toyoda
& W. Watari **Sup. 3** (1956), 13

Verification of Pion Theory of Nuclear Forces ....
...........J. Iwadare, S. Otsuki, R. Tamagaki & W. Watari
Sup. 3 (1956), 32
(*cf.* Errata: Sup. 5, p. 123)

32 Nuclear Spin and Moments

On the Value of the Electric Quadrupole Moment of the Deuteron
(L)................................E. Isiguro **3** (1948), 312

On the Angular Momentum of the Atomic Nucleus induced by Its
Surface Vibrations............. Mokichiro Nogami **3** (1948), 362

On the Neutron-Proton Scattering (L) ....
.... M. Watanabe, J. Miida & M. Sato **5** (1950), 162

Nucleon-Nucleon Interaction at High Energies (L) ....
.......Y. Fujimoto, S. Hayakawa & Y. Yamaguchi **5** (1950), 318

A Possible Explanation for the Deviations of Nuclear Magnetic
Moments from the Schmidt Lines (L)....................
.....................................H. Miyazawa **6** (1951), 263

On the Exchange Current (L) ....Y. Ataka **6** (1951), 627

Deviations of Nuclear Magnetic Moments from the Schmidt Lines
.... Hironari Miyazawa **6** (1951), 801

On the Quadrupole Moments of Light Nuclei...................
.... Hisashi Horie & Shiro Yoshida **6** (1951), 829

32 Nuclear Spin and Moments *(continued)*

Non-Additivity of Nucleon Magnetic Moment in the Deuteron .....
.... Hironari Miyazawa **7** (1952), 207

Magnetic Moment of Li^6 (L) ... T. Komoda & M. Sasaki 8 (1952), 669

Configuration Mixing and Magnetic Moments of Nuclei (L) ......
.... A. Arima & H. Horie **11** (1954), 509

Configuration Mixing and Magnetic Moments of Odd Nuclei........
.... Akito Arima & Hisashi Horie **12** (1954), 623
(*cf.* Errata: Vol. 13. p. 127)

Electromagnetic Properties of Deuteron ....
..........Iwao Sato & Kiyomi Itabashi **13** (1955), 341

Relation between the Quadrupole Moments and the Widths of the
Giant Resonance of Photonuclear Reaction (L) ....
..........K. Okamoto **15** (1956), 75

Note on the Nuclear Level of Spin 2^+ (L)......M. Sakai **15** (1956), 416

On the Exchange Magnetic Moments ....
.... Eiichi Kuroboshi & Yasuo Hara **20** (1958), 163

Nuclear Moments and Configuration Mixing ....
...Hiroshi Noya, Akito Arima & Hisashi Horie **Sup. 8** (1958), 33

33 Nuclear Structure

On the Angular Momentum of the Atomic Nucleus induced by Its
Surface Vibrations.......... Mokichiro Nogami **3** (1948), 362

Neutron Cross Section and Nuclear Shell Structure (L) ....
..........S. Yamabe & J. Sanada **5** (1950), 1049

On the Excited States of Even Nuclei (L) ....H. Horie,
M. Umezawa, Y. Yamaguchi & S. Yoshida **6** (1951), 254

Nuclear Shell Model and the β-Decay Schemes. I......M. Umezawa,
S. Nakamura, Y. Yamaguchi & M. Taketani **6** (1951), 408

Non-Additivity of Nucleon Magnetic Moment in the Deuteron .....
.... Hironari Miyazawa **7** (1952), 207

On the Structure of Heavy Nuclei...... Osamu Miyatake **7** (1952), 285

The *j-j* Coupling Shell Model..........Minoru Umezawa 8 (1952), 509
(*cf.* Errata: Vol. 10. p. 124)

On the *D* State Probability of Deuteron (L)..S. Machida **9** (1953), 683

33 Nuclear Structure (*continued*)

Note on a *j-j* Coupling Shell Model.... Minoru Umezawa **10** (1953), 505

On the Lower Energy Levels of Li^6 (L)........................
..............................T. Isidu & S. Obi **10** (1953), 690

Generalized Racah Coeffcient and Its Applications.................
.....Akito Arima, Hisashi Horie & Yukito Tanabe **11** (1954), 143

On the Binding Energy and Properties of Lower Energy Levels of
Li^6............... Masato Morita & Taro Tamura **12** (1954), 653
cf. Errata: Vol. 13, p. 225)

The Properties of the Meson Theoretical Potentials in Li^6.........
Shoichiro Otsuki, Taturo Sawada & Shota Suekane **13** (1955), 79
(*cf.* Errata: Vol. 14, p. 610)

On the Foundation of the Unified Nuclear Model. I...............
.........Toshio Marumori, Jiro Yukawa & Ryokichi Tanaka
13 (1955), 442

On the Foundation of the Unified Nuclear Model. II (L)..........
......................T. Marumori & E. Yamada **13** (1955), 557

Nuclear Structure as revealed by Electric Excitation.............
...............................Clark Goodman **14** (1955), 95

Separation Energies and Nuclear Structures in Light Nuclei.......
.... Takao Tati **14** (1955), 107

On the Binding Energies of Very Light Nuclei (L)..............
........................S. Suekane & W. Watari **14** (1955), 490

Meson-Theoretical Potentials in N^{14} (L) ....
..............S. Otsuki, T. Sawada & S. Suekane **14** (1955), 606

On the Relation between Hill-Wheeler's and Bohr-Mattelson's Descriptions of the Nuclear Collective Model (L)..............
..................................T. Marumori **14** (1955), 608

Deuteron Stripping Reactions and Nuclear Shell Structure..........
......................Sueji Okai & Mitsuo Sano **15** (1956), 203

Effect of Hard Core on the Binding Energies of H^3 and He^3. I.....
Takashi Kikuta, Masato Morita & Masami Yamada **15** (1956), 222

A Collective Discription of the Surface Oscillation of Atomic Nuclei
——*Extension of Tomonaga's Method to Three Dimensional Nucleus*——... Tatuoki Miyazima & Taro Tamura **15** (1956), 255

33 Nuclear Structure *(continued)*

Note on the Nuclear Level of Spin 2^+ (L) ...... M. Sakai **15** (1956), 416

Surface Rigidity and Shell Structure of Nuclei (L) .... T. Marumori, S. Suekane & A. Yamamoto **15** (1956), 582

Nuclear Quadrupole Moment and Rigidity of Nuclear Core (L) .... T. Marumori, S. Suekane & A. Yamamoto **15** (1956), 584

A Classical Theory of the Collective Description .... Yôiti Watanabe **16** (1956), 1

On Quantum-Mechanical Nuclear Dipole Vibrations .... Jun-ichi Fujita **16** (1956), 112

Some Remarks on the Nuclear Level Spacing (L) .... Y. Fujimoto, F. Fukuzawa & S. Okai **16** (1956), 246

Nuclear Deformability and Shell Structure ...... Toshio Marumori, Shota Suekane & Atsuko Yamamoto **16** (1956), 320

Relation between the Nuclear Collective Model and the Individual Particle Model with Configurational Mixing .... Satio Hayakawa & Toshio Marumori **17** (1957), 43

Effect of Hard Cores on the Binding Energies of H^3 and He^3. II .... Takashi Ohmura, Masato Morita & Masami Yamada **17** (1957), 326

Pion Theory of Three-Body Forces .... Jun-ichi Fujita & Hironari Miyazawa **17** (1957), 360

Spin-Orbit Coupling in Heavy Nuclei .... Jun-ichi Fujita & Hironari Miyazawa **17** (1957), 366

The Magnetic Octupole Moments of Nuclei .... Shota Suekane & Yoshio Yamaguchi **17** (1957), 443

The Hexadecapole Moments of Atomic Nuclei .... Shota Suekane & Yoshio Yamaguchi **17** (1957), 449

Saturation of Nuclear Forces .... Neutron Proton Scattering .... A. B. Bhatia & S. M. Shah **17** (1957), 561

The Electric-Octupole Transitions of Nuclei .... Mitsuo Sano **18** (1957), 223

Cluster Development Method in the Quantum Mechanics of Many-Particle System. II——*Saturation of Nuclear Forces*—— .... Fumiaki Iwamoto & Masami Yamada **18** (1957), 345

33 Nuclear Structure *(continued)*

A Remark on the Moments of Inertia of Rotating Nuclei.......... ....Satio Hayakawa & Toshio Marumori **18** (1957), 396

Pairing Energy of Nuclear Particles....Morikazu Nomoto **18** (1957), 483

On the Ground State Spin of Ti^{47} and Mn^{55} (L) ....S. Yanagawa **18** (1957), 661

Low Lying Levels of P^{32} and j-j Coupling (L) ....S. P. Pandya **18** (1957), 668

Low Levels of Some Nuclei in the $d_{3/2}-f_{7/2}$ Shell................ ....Sudhir P. Pandya **19** (1958), 404

Nuclear Binding Energies and Low-Lying Energy Levels in the $2s_{1/2}$ and $1d_{3/2}$ Shells....................Akito Arima **19** (1958), 421

On the Collective Mode of Internal Motion of the Nucleus to be coupled with the Irrotational Surface Motion ......S. Nagata, R. Tamagaki, S. Amai & T. Marumori **19** (1958), 495

Rigidity for Octupole Type Surface Deformation and Shell Structure (L) ....S. Suekane & W. Watari **20** (1958), 108

Spontaneous Fission Half-Lives................................ ....Tatuya Sasakawa & Masaru Yasuno **20** (1958), 315

First Excited State in Ca^{42} and Ca^{44} (L) .....T. Komoda **20** (1958), 580

An Illustrative Example of the Nuclear Collective Motion (L)..... .... F. Iwamoto **20** (1958), 776

Foundation of Deformed Potential Model for Nuclear Rotation...... ....K. Ikeda, M. Kobayasi, T. Marumori, S. Nagata & T. Shiozaki **20** (1958), 960

Nuclear Moments and Configuration Mixing ....Hiroshi Noya, Akito Arima & Hisashi Horie **Sup. 8** (1958), 33

34 Nuclear Reactions

On the Proton-Decay in Cosmic-Ray Stars (L).................. ....Y. Fujimoto & Y. Yamaguchi **3** (1948), 462

On the Photo-Disintegration of the Deuteron ——*Pseudoscalar Meson Theory*——(L)....H. Enatsu & Y. Takano **4** (1949), 375

High Energy Photo-Disintegration of the α-Particle (L) ....Y. Nishida & M. Nogami **4** (1949), 394

On the Photo-Disintegration of the Deuteron —*Pseudoscalar Meson Theory*——.....Hiroshi Enatsu & Yoshiro Takano **4** (1949), 543

34 Nuclear Reactions *(continued)*

Note on Very Large Cosmic-Ray Stars .... Yoichi Fujimoto & Yoshio Yamaguchi **5** (1950), 76

The Range and the Mean Free Path of High Energy Nucleons in Nuclear Matter (L) .... Y. Fujimoto & Y. Yamaguchi **5** (1950), 141

Notes on High Energy Nuclear Evaporation (L) .... Y. Yamaguchi **5** (1950), 142

Note on High Energy induced Fission of Bi (L) .... Y. Yamaguchi **5** (1950), 143

The Effect of Exclusion Principle on the Nucleon-Nucleon Scattering in Nuclear Matter (L) .... Y. Yamaguchi **5** (1950), 332

Order of Magnitude Theory of the Depression of Coulomb Barrier Height in Highly Excited Nuclei (L) .... Y. Yamaguchi **5** (1950), 501

High Energy Nuclear Evaporation .... Yoichi Fujimoto & Yoshio Yamaguchi **5** (1950), 787

Notes on Fluctuation in Nuclear Evaporation Process (L) .... K. Takayanagi & Y. Yamaguchi **5** (1950), 894

On the Stars of Light Nuclei (L) .... Y. Yamaguchi **5** (1950), 896

On the Nuclear Stars (L) .... Y. Yamaguchi **5** (1950), 904

Nuclear Disintegration caused by Cosmic-Rays .... Yoichi Fujimoto & Satio Hayakawa **6** (1951), 96

Note on Very Large Cosmic-Ray Stars. II .... Yoshio Yamaguchi **6** (1951), 529

Effects of Tensor Forces on the Elastic Scattering of Nucleons by Deuterons (L) .... H. Horie, T. Tamura & S. Yoshida **6** (1951), 623

On the High Energy Nuclear Photoelectric Reaction (L) .... S. Yoshida **6** (1951), 1032

Nuclear Cross Sections for Fast Neutrons and Interaction between High Energy Nucleons .... Kojiro Ida **7** (1952), 269

Disintegration of Light Nuclei by σ-Meson Capture ..... S. Enomoto, Y. Fujimoto, H. Horie & Y. Tsuzuki **7** (1952), 353
(*cf.* Errata: Vol. 7, p. 603)

34 Nuclear Reactions *(continued)*

On the Angular Distribution of D+D Nuclear Reaction Products...
.... Yoshihiro Nakano **8** (1952), 39

Effects of Tensor Forces on the Neutron-Deuteron Scattering ......
.... Hisashi Horie, Taro Tamura & Shiro Yoshida **8** (1952), 341

On the "Optical Method" for the Scattering of High Energy Particles by Complex Nuclei (L) ....T. Marumori **9** (1953), 321

Symmetric Fission (L) ....T. Sasakawa & T. Sawada **9** (1953), 324

Deuteron Stripping Reaction...............Shiro Yoshida **10** (1953), 1
(*cf.* Errata: Vol. 10, p. 370)

Theory of Rearrangement Collisons (L) ....
........Y. Fujimoto, S. Hayakawa & K. Nishijima **10** (1953), 113

A Test of Charge Independence by the Nuclear Reactions (L).....
....................Y. Fujimoto & Y. Yamaguchi **10** (1953), 476

An Interpretation of Asymmetric Fission (L) ....
.... T. Sasakawa & T. Sawada **10** (1953), 585

The Formal Theory of Error Estimation of Rearrangement Collisions (L)..............................T. Sasakawa **11** (1954), 121

Reduced Widths from (*d, p*) Reactions..........................
...Yoichi Fujimoto, Ken Kikuchi & Shiro Yoshida **11** (1954), 264

On the Neutron He^4 Scattering (L)..........T. Tamura **11** (1954), 335

Interpretation of the Excitation of Gamma-Rays by 10 MeV Neutrons
.................Satio Hayakawa & Ken Kikuchi **11** (1954), 513

High Energy Nucleon Scattering by Nuclei (L)......O. Kawaguchi,
M. Kawai, Y. Nishida, M. Sano & H. Ui **12** (1954), 99

Reduced Widths on Collective Model.......Shiro Yoshida **12** (1954), 141

A Formulation of the Theory of Alpha-Particle Decay from Time-Independent Equations............. R. G. Thomas **12** (1954), 253

On the Direct Interaction in Nuclear Reactions (L) ....
.... S. Hayakawa & T. Sasakawa **12** (1954), 401

Elastic Scattering of Alpha-Particles by Heavy Nuclei (L) ....
.... K. Izumo **12** (1954), 549

Gamma Ray Energy Spectrum from Iron bombarded by 14-MeV Neutrons.........Satio Hayakawa & Ken Kikuchi **12** (1954), 578

34 Nuclear Reactions *(continued)*

Note on the Angular Distribution of Photo-Reaction ....
....Masato Morita, Atsushi Sugie & Shiro Yoshida **12** (1954), 713
(*cf.* Errata: Vol. 13, p. 225)

Nuclear Reactions at Moderate Energies and Fermi Gas Model .....
...Satio Hayakawa, Mitsuji Kawai & Ken Kikuchi **13** (1955), 415
(*cf.* Errata: Vol. 15, p. 188)

The Non-Mesonic Photonuclear Reactions initiated by High Energy
μ-Mesons (L) ....S. Kaneko, T. Kubozoe,
M. Okazaki & M. Takahata **13** (1955), 461

Inelastic Scattering of Neutrons by Rotational Excitation..........
.... Satio Hayakawa & Shiro Yoshida **14** (1955), 1

Formal Theory of Nuclear Direct Interaction in Nuclear Scattering
(L)......................................H. Ui **14** (1955), 75

The Cu(*n*; *2n*) Excitation Function and the Knock-out Process in
Nuclear Reactions.........Ryuzo Nakasima & Ken Kikuchi
14 (1955), 126

The Cloudy Crystal Ball Model for 14 MeV Neutron Reactions (L)
................M. Kawai, H. Ui & M. Nagasaki **14** (1955), 263

Stripping Reactions and Nuclear Shell Model (L) ....
..........................S. Okai & M. Sano **14** (1955), 399

On Quantum-Mechanical Nuclear Diople Vibrations (L)...........
....................................J. Fujita **14** (1955), 400

On the Nuclear Phto-Reaction. I (L)..........................
........................S. Fujii & S. Takagi **14** (1955), 402

On the Nuclear Photo-Reaction. II (L)........................
........................S. Fujii & S. Takagi **14** (1955), 405

Deuteron-Deuteron Reaction at High-Energy (L)................
..................................Y. Nishida **14** (1955), 495

Relation between the Quadrupole Moments and the Widths of the
Giant Resonance of Photonuclear Reaction (L).............
.................................K. Okamoto **15** (1956), 75

Deuteron Stripping Reactions and Nuclear Shell Structure.........
.....................Sueji Okai & Mitsuo Sano **15** (1956), 203

34 Nuclear Reactions *(continued)*

Elastic Scattering of Alpha-Particles by Heavy Elements...........
................Nobuo Oda & Kichinosuke Harada **15** (1956), 545

Interpretation on Nitrogen- and Proton-Induced Nuclear Reactions....
Ryuzo Nakasima, Yoshihisa Tanaka & Ken Kikuchi **15** (1956), 574

Rotational Excitation with Neutron Inelastic Scattering (L)........
.................................M. Yasuno **15** (1956), 586

On Quantum-Mechanical Nuclear Dipole Vibrations................
..............................Jun-ichi Fujita **16** (1956), 112

Inelastic Scattering of Nucleons by Nuclei (L)..................
..........R. Kajikawa, T. Sasakawa & W. Watari **16** (1956), 152

General Theory of Deuteron induced Reaction. I——*(d, p) and (d, n)*
Reactions—— ....Haruo Ui **16** (1956), 299

Deuteron Stripping and the Compound Nucleus..................
............................Masayuki Nagasaki **16** (1956), 429

Elastic Scattering of 24.6 MeV Alpha Particles by Au (L)........
........................S. Igarasi & T. Takano **17** (1957), 124

Hydrodynamical Treatment of Multiple Meson Production in High
Energy Nucleon-Nucleus Collisions.......................
...........S. Amai, H. Fukuda, C. Iso & M. Sato **17** (1957), 241

On the Exchange Effect in the Stripping Reactions (L)...........
.... T. Kammuri, R. Nakasima & S. Takagi **17** (1957), 306

A Model for the Inelastic Scattering of Nucleons (L).............
......................................S. Okai **17** (1957), 308

Antiproton-Nucleus and Antiproton-Proton Interactions (L)........
...M. Nozawa, T. Goto, N. Yajima & R. Nakasima **17** (1957), 504

Remarks on the Elastic Scattering of Deuterons by Heavy Nuclei
(L)................................Y. Nishida **17** (1957), 506
(*cf.* Errata: Vol. 17, p. 734)

On the Elastic Scattering of Charged Particles by Nuclei in the
Intermediate Energy Region...........................
...................S. N. Ghoshal & B. B. Baliga **17** (1957), 556

The *l*-Forbidden Magnetic Dipole Transitions...................
.......Akito Arima, Hisashi Horie & Mitsuo Sano **17** (1957), 567

34 Nuclear Reactions *(continued)*

The Penetration of the Diffuse Nuclear Potential Barrier ....
.... Ken Kikuchi **17** (1957), 643

Interpretation on the Ratio of the Emission Probabilities for Protons
and Neutrons (L) ......R. Nakasima & K. Kikuchi **17** (1957), 816

Cloudy Crystal Ball Model for Neutron Reactions at Higher Energies
....M. Kawai, M. Nagasaki, M. Soga, T. Terasawa, H. Ui &
Y. Wada **18** (1957), 66

Stationary Fusion Reactions at Low Temperatures (L) ....
.... T. Nishiyama, T. Sekiya & Y. Watanabe **18** (1957), 93

The Indirect (p, d) Process (L) ....
.....................H. Hagiwara & M. Tanifuji **18** (1957), 97

Magnetic Dipole Sum Rules for Photodisintegration of the Deuteron
(L) ....M. L. Rustgi & J. S. Levinger **18** (1957), 100

Inelastic Scattering of Nucleons by Light Nuclei.................
..............Ryoichi Kajikawa & Wataro Watari **18** (1957), 103

Inelastic Scattering of Neutrons and Surface Direct Processes......
.... Haruo Ui **18** (1957), 163

Preliminary Note on the Indirect (p, t) Process (L) ....
.....................H. Hagiwara & M. Tanifuji **18** (1957), 322

Deuteron Production by Nucleons bombarding Atomic Nuclei ......
.... Ken Kikuchi **18** (1957), 503

Electrodisintegration of He^4 Nucleus ....
.... Toshinosuke Muto & Takashi Sebe **18** (1957), 621

Note on the Collision Matrix for the Nuclear Reactions. I ....
............Mitsuji Kawai & Masayuki Nagasaki **19** (1958), 77

Theory of Direct Interaction in Nucleon Inelastic Scattering ....
.... Shiro Yoshida **19** (1958), 169

Elastic Scattering of Deuterons by Heavy Nuclei ....
.... Yoshihiko Nishida **19** (1958), 389

Single Particle Transition in Neutron Inelastic Scattering by Deformed Nuclei..........Hiroyuki Matsunobu & Shiro Yoshida
19 (1958), 599

Note on Heavy Ion induced Nuclear Reactions (L) ....
.... R. Nakasima **19** (1958), 743

34 Nuclear Reactions (*continued*)

Elastic Scattering in High Energy and Impulse Approximation (L)
.... Y. Sakamoto & T. Sasakawa **19** (1958), 745
Spontaneous Fission Half-Lives ....
.... Tatuya Sasakawa & Masaru Yasuno **20** (1958), 315
Nitrogen induced Nuclear Reactions in Sodium ....
.... Ryuzo Nakasima **20** (1958), 625
A Note on the Elastic Scattering of High Energy Deuterons by Complex Nuclei (L) ..... Y. Nishida & H. Tanaka **20** (1958), 976
Theory of Scatterings and Reactions ....
.... Yoshio Yamaguchi **Sup. 7** (1958), 1

35 Beta Decays

On the β-Ray Spectrum of Cu^{64} (L) ....
.... S. Nakamura & K. Ono **2** (1947), 158
On the Beta-Disintegration Possibility accompanying with the Capture of a Negative Meson by a Nucleus (A) ....
.... Y. Tanikawa **3** (1948), 213
On the Theory of Beta-Disintegration ....
.... Yasutaka Tanikawa **3** (1948), 338
Some Remarks on the Theory of Beta-Disintegration (L) ....
.... S. Takagi **3** (1948), 445
On the Beta-Spectra of the Cu^{64} (L) ....
.... S. Goto, E. Kanai & M. Kobayasi **3** (1948), 449
(*cf.* Errata: Vol. 4, p. 102)
The Half-Life of Radioactive Decay of Free Neutron (L) ....
.... N. Shôno & H. Hagiwara **4** (1949), 364
Radiative Correction to Decay Processes. I (L) .... T. Nakano,
Y. Watanabe, S. Hanawa & T. Miyazima **5** (1950), 338
Radiative Correction to Decay Processes. II—*Beta Disintegration of Nucleon*— .... T. Nakano,
Y. Watanabe, S. Hanawa & T. Miyazima **5** (1950), 1014
On the Spin of Neutrino .... Ken-ichi Ono **6** (1951), 238
On the Matrix Elements of the Beta Decay .... Mituo Taketani,
Seitaro Nakamura, Ken-ichi Ono & Minoru Umezawa **6** (1951), 286

35 Beta Decays *(continued)*

Nuclear Shell Model and the β-Decay Schemes. I
M. Umezawa, S. Nakamura, Y. Yamaguchi & M. Taketani
6 (1951), 408

Zero-Zero Transition and Electron-Neutron Interaction (L)
Y. Yamaguchi **6** (1951), 442

β-Ray Spectrum and ft-Values in the Forbidden Transitions
Seitaro Nakamura, Hisao Takebe
& Minoru Umezawa **6** (1951), 604

On the Mesonic Correction to the β-Decay T. Kotani, S. Machida,
S. Nakamura, H. Takebe, M. Umezawa & T. Yoshimura
6 (1951), 1007

Beta-Spectrum of the Third Forbidden Transition of Rb^{87}
Yukio Tomozawa, Minoru Umezawa
& Seitaro Nakumura **7** (1952), 317

Note on the Forbidden Transitions in Beta-Decay
Yukio Tomozawa & Minoru Umezawa **7** (1952), 323

Radiative Correction to Decay Processes. III——*Forbidden Beta-Transitions caused by Radiation Processes*——
Sigeo Hanawa & Tatuoki Miyazima **7** (1952), 391

Notes on the Decay of the Neutron. I
Tsuneyuki Kotani, Hisao Takebe, Minoru Umezawa
& Yoshio Yamaguchi **7** (1952), 469

Notes on the Decay of the Neutron. II
Tsuneyuki Kotani, Hisao Takebe, Minoru Umezawa
& Yoshio Yamaguchi **8** (1952), 120

Radiative Correction to β-Decay Martix Element (L)
S. Kamefuchi **8** (1952), 137

On the β-Ray Angular Correlations
Masami Yamada & Masato Morita **8** (1952), 431

On the β-γ Angular Correlation of Sb^{124}. I
Masato Morita & Masami Yamada **8** (1952), 449

On the Natural Decay of the Free Neutron
Sho Tanaka & Motô Itô **9** (1953), 169

35 Beta Decays (*continued*)

On the Relations between Beta-Decay Nuclear Matrix Elements ....
....Masami Yamada **9** (1953), 268

On the Electron-Neutrino Angular Correlation ....
.... Masato Morita **9** (1953), 345

On the Theory of β-Decay (L)................................
.......................Y. Tanikawa & K. Saeki **10** (1953), 232

Note on the Finite Nuclear Size Effect in Beta-Decay (L) ....
.... M. Yamada **10** (1953), 241

Correction to the Beta-Decay Nuclear Matrix Elements ....
....Masami Yamada **10** (1953), 245

Theoretical Reinvestigation of the Beta-Spectrum of RaE ....
....Masami Yamada **10** (1953), 252

Interference Terms of Beta-Ray Angular Correlations (L) ....
.... M. Morita **10** (1953), 363

Note on Coexistence of Tensor and Axialvector Interactions in Beta-
Decay (L)..............................M. Morita **10** (1953), 364

Effect of Collective Motion on Beta Decay (L)..S. Suekane **10** (1953), 480

Upper Bound of the Pseudoscalar Coupling Constant in Beta-Decay
.... Jun-ichi Fujita & Masami Yamada **10** (1953), 518

β-Spectra of Fe^{59}, Rb^{87}, Tc^{99}, Cs^{137} and the Coupling Constants of
Scalar and Tensor Interactions in β-Decay.................
.... Masato Morita, Jun-ichi Fujita & Masami Yamada
10 (1953), 630
(*cf.* Errata: Vol. 13, p. 224)

On the β-γ Angular Correlation of Sb^{124}. II......................
.... Masato Morita & Masami Yamada **10** (1953), 641

Pseudoscalar Interaction in the Theory of Beta-Decay and RaE.....
....Hisao Takebe **10** (1953), 673

β-γ Angular Correlation of Tm^{170} ....Jun-ichi Fujita,
Masato Morita & Masami Yamada **11** (1954), 219

Beta-Ray Spectra. I......................Hisao Takebe **12** (1954), 561
(*cf.* Errata: Vol. 13, p. 127)

Beta-Ray Spectra. II.....................Hisao Takebe **12** (1954), 574
(*cf.* Errata: Vol. 13, p. 127)

35 Beta Decays *(continued)*

Beta-Ray Spectra. III ………… Hisao Takebe **12** (1954), 747

Beta-Alpha Angular Correlation of Li^8 (L) ………… M. Morita & M. Yamada **13** (1955), 114
(*cf.* Errata: Vol. 13, p. 225)

Matrix Elements of β-Decay for a Spheroidal Core Model (L) ………… M. Nomoto **13** (1955), 117

Nuclear Matrix Element for β-Decay and Ratio of Coupling Constants ………… Jun-ichi Fujita **13** (1955), 260

On the β-γ Angular Correlations of Tm^{170} and Sb^{124}——*VT Interaction*—— ………… Yusuke Kato & Masato Morita **13** (1955), 276
(*cf.* Errata: Vol. 14, p. 174)

Explicit Formulae of Beta-Gamma Directional Correlation ………… Masato Morita **14** (1955), 27

β-Ray Spectrum of RaE ………… Hisao Takebe, Seitaro Nakamura & Mituo Taketani **14** (1955), 317

Proposal for Experiments for Determination of Beta-Decay Interaction and Theory of Triple Cascade Transition ………… Masato Morita **15** (1956), 445

The Theory of Radiative *K*-Capture. I ………… Jiro Yukawa **15** (1956), 561

Nuclear Matrix Element Relations in the Fermi Theory of Beta Decay ………… Tino Ahrens **18** (1957), 331

Angular Correlation of Internal Bremsstrahlung and Successive Nuclear Gamma-Ray in the Radiative *K*-Capture (L) ………… Y. Koh, O. Miyatake & Y. Watanabe **18** (1957), 663

Formulas in the Fermi Theory of Beta-Decay. I——*Beta-Spectrum*—— ………… Zyun-itiro Matumoto & Masami Yamada **19** (1958), 285

A Theory of Lepton which is Invariant under Space Inversion (L) ………… K. Sekine **19** (1958), 740

Parity Nonconservation and the Beta-Spectrum of RaE ………… J. Fujita, M. Yamada, Z. Matumoto & S. Nakamura **20** (1958), 287

Mesic Correction to the Beta-Decay in a Nucleus ………… J. Fujita, Z. Matumoto, E. Kuroboshi & H. Miyazawa **20** (1958), 308

The First Forbidden β-Decay ………… Tsuneyuki Kotani & Marc Ross **20** (1958), 643

35 Beta Decays (*continued*)

Connection between the Meson Decay and the Beta-Decay ....
.... Shoichi Sakata **Sup. 1** (1955), 83

On Yukawa's Theory of the Beta-Disintegration and the Lifetime of
the Meson .... Shoichi Sakata **Sup. 1** (1955), 118

36 Astrophysics

Giant Stars producing Energy by C-N Reaction ....
..............................Chushiro Hayashi 2 (1947), 127

Proton-Neutron Concentration Ratio in the Expanding Universe at the
Stages preceding the Formation of the Elements ....
..............................Chushiro Hayashi 5 (1950), 224

Populations and Evolution of Stars ....
....Mituo Taketani, Takeo Hatanaka & Shinya Obi **15** (1956), 89

Supernova Origin of Cosmic Rays ....Satio Hayakawa **15** (1956), 111

Nuclear Reactions in the Later Stage of the Stellar Evolution......
...K. Nakagawa, T. Ohmura, H. Takebe & S. Obi **16** (1956), 389

Helium Capturing Reactions in Stars ....
S. Hayakawa, C. Hayashi, M. Imoto & K. Kikuchi **16** (1956), 507
(*cf.* Errata: Vol. 17, p. 618)

Formation of Light Nuclei in the Expanding Universe............
............Chushiro Hayashi & Minoru Nishida **16** (1956), 613

Effects of the Central Spin on Planetary Motion.................
.... Anadijiban Das **17** (1957), 373

Giant Stars with Shell Sources of C-N and *p-p* Reactions.........
..............................Chushiro Hayashi **17** (1957), 737

The Artificial Satellite and the Relativistic Red Shift (L) ....
.... A. Das **18** (1957), 554

Efficiency of Acceleration of Relativistic Particles in the Crab Nebula
(L) ....S. Hayakawa & Y. Terashima **18** (1957), 555

High Energy Gamma-Rays from the Crab Nebula (L) ....
.................................S. Hayakawa **19** (1958), 219

Cepheid Vibration ....T. C. Roy **19** (1958), 470

Stellar Syntheses of the α-Particle Nuclei Heavier than Ne^{20} (L)...
..C. Hayashi, M. Nishida, N. Ohyama & H. Tsuda **20** (1958), 110

37 **Nuclear Spectroscopy** (see also Nuclear Spin and Moments, Nuclear Structure)

On the Internal Conversion of γ-Rays in M-Shells (A) ....
.... M. Tanifuji & M. Nogami 3 (1948), 215

On Internal Pair Creation following Some Beta-Decay (L) ....
....................................T. Nakano 6 (1951), 440

Zero-Zero Transitions (L)......S. D. Drell & M. E. Rose 7 (1952), 125

The β-γ Angular Correlation of Sb^{124} (L) ....
........................M. Morita & M. Yamada **10** (1953), 111

On the Excited States of Even-Even Nuclei (L) ....
......................M. Nagasaki & T. Tamura **12** (1954), 248

Beta-Alpha Angular Correlation of Li^8 (L) ....
........................M. Morita & M. Yamada **13** (1955), 114
(*cf.* Errata: Vol. 13. p. 225)

On the Gamma-Transition of Nuclei.........Mitsuo Sano **14** (1955), 81

E_2+M_1 Mixed Transitions in Heavy Odd A Nuclei (L) ....
..................................M. Kawamura **18** (1957), 87
(*cf.* Errata: Vol. 18, p. 450)

The Electric-Octupole Transitions of Nuclei..Mitsuo Sano **18** (1957), 223

Multipole Mixing in Odd Mass Spheroidal Nuclei.................
Ryuzo Nakasima, Shuichiro Yamasaki & Yasukazu Yoshizawa
19 (1958), 31

Low Levels of Some Nuclei in the $d_{3/2}-f_{7/2}$ Shell.................
..................................S. P. Pandya **19** (1958), 404

Nuclear Binding Energies and Low-Lying Energy Levels in the $2s_{1/2}$ and $1d_{3/2}$ Shells.....................Akito Arima **19** (1958), 421

41 **Cosmic Radiation**

Some Considerations about the Production of Meson Showers in Matter (L)........................S. Tomonaga **2** (1947), 90

On the Production of Cosmic Ray Bursts by Mesotrons (A) ....
..............................I. Sato & S. Ozaki **2** (1947), 92

Some Consideration about the Production of Meson Showers in Matter (A)........................S. Tomonaga **2** (1947), 99

41 Cosmic Radiation *(continued)*

On the Theory of Air Shower initiated by Secondary Soft Rays (L) ....S. Hayakawa & S. Tomonaga 2 (1947), 161

On the Temperature Effect of Underground Cosmic Radiation (L) ....T. Miyazima 3 (1948), 99

Cosmic-Ray Underground (L) ....S. Hayakawa 3 (1948), 199

Some Remarks on Cosmic-Ray Burst (L) ...S. Hayakawa 3 (1948), 458

On the Proton-Decay in Cosmic-Ray Stars (L) ....Y. Fujimoto & Y. Yamaguchi 3 (1948), 462

Interpretation of Bursts in Thin-Walled Chambers (L) ....Y. Fujimoto & Y. Yamaguchi 4 (1949), 101

On the Nucleon Component in Cosmic Rays (L) ....Y. Fujimoto & Y. Yamaguchi 4 (1949), 230

Phenomenological Treatment on the Production of Cosmic-Ray Mesons (L) ....S. Hayakawa & J. Nishimura 4 (1949), 232
(*cf.* Errata: Vol. 4, p. 397)

Cosmic-Ray Bursts under Thick Shields (L) ....Y. Fujimoto, S. Hayakawa & Y. Yamaguchi 4 (1949), 233

Cosmic-Ray Underground. I ....Satio Hayakawa & Sin-itiro Tomonaga 4 (1949), 287

A Preliminary Treatment of Nucleon Cascade (L) ....H. Kita & H. Hasegawa 4 (1949), 371

Three Dimensional Calculations of the Cosmic Ray Intensities. I (L) ....H. Hasegawa & H. Kita 4 (1949), 376

On the Electronic Component in Extensive Air Showers (L) ....Y. Fujimoto, S. Hayakawa & Y. Yamaguchi 4 (1949), 381

On the Nuclear Stars ....Yoichi Fujimoto & Yoshio Yamaguchi 4 (1949), 468
(*cf.* Addendum : Vol. 4, p. 569 L)

Cosmic-Ray Underground. II ....Satio Hayakawa & Sin-itiro Tomonaga 4 (1949), 496

On the Nature of Cosmic-Ray Bursts .... Yoichi Fujimoto & Satio Hayakawa 4 (1949), 502

On the Nuclear Stars (L) ....Y. Yamaguchi 4 (1949), 569
(*Addendum for* Vol. 4, p. 468)

Directional Distribution of Extensive Air Showers (L) ....Y. Fujimoto, S. Hayakawa & Y. Yamaguchi 4 (1949), 571

41 Cosmic Radiation *(continued)*

Soft Component in Upper Atmosphere (L) ....
.... S. Hayakawa & J. Nishimura 4 (1949), 578

High Energy Electronic Component in Extensive Air Showers (L)
.... Y. Fujimoto & S. Hayakawa 4 (1949), 579

Neutron Component in Extensive Air Showers (L) ....
.... Y. Fujimoto, S. Hayakawa & Y. Yamaguchi 4 (1949), 579

Note on Very Large Cosmic-Ray Stars ....
.... Yoichi Fujimoto & Yoshio Yamaguchi 5 (1950), 76

A Note on the Mixed Shower (L) .... S. Ogawa 5 (1950), 138

On the Origin of Electronic Rays with Moderate High Energy (L)
.... Y. Fujimoto & S. Hayakawa 5 (1950), 144

Excess Electrons in Lower Atmosphere and γ-Decay of Neutral
Mesons (L) .... S. Hayakawa 5 (1950), 158

The Electronic Component in Extensive Air Showers ....
...... Yoichi Fujimoto, Satio Hayakawa & Yoshio Yamaguchi
5 (1950), 196

The East-West Effect of the Cosmic-Ray in the Upper Atmosphere
(L) .... S. Ogawa & Y. Nagahara 5 (1950), 314

A Picture for Cosmic-Ray Stars (L) ....
.... Y. Fujimoto & S. Hayakawa 5 (1950), 315

Diffusion of the Nucleon Component (L) ..... Y. Fujimoto 5 (1950), 316

On the Second Maximum of the Rossi Transition Curve. I (L) ....
.... T. Kameda & I. Miura 5 (1950), 323

On the Second Maximum of the Rossi Transition Curve. II (L) ...
.... I. Miura & T. Kameda 5 (1950), 325

Interpretation of the Second Maximum of Rossi Curve (L) ....
.... S. Hayakawa & J. Nishimura 5 (1950), 326

A Remark on the Transition Curve of Cosmic-Ray Showers (L) ....
.... J. Nishimura 5 (1950), 328

On the East-West Effect of the Cosmic-Radiation in the Upper
Atmosphere ...... Shuzo Ogawa & Yukio Nagahara 5 (1950), 428

On the Positive Excess of the Hard Component in Cosmic-Ray (L)
.... S. Ogawa 5 (1950), 489

41 Cosmic Radiation (*continued*)

Cosmic-Ray Underground (L) ....
..........S. Hayakawa, K. Mano & T. Miyazima **5** (1950), 495

On the Production of Cosmic Ray Mesons......................
.....Y. Fujimoto, H. Fukuda, S. Hayakawa & Y. Yamaguchi
5 (1950), 669

High Energy Nuclear Evaporation..............................
.............Yoichi Fujimoto & Yoshio Yamaguchi **5** (1950), 787

Cosmic-Ray Underground. III..................................
Satio Hayakawa, Koiti Mano & Tatuoki Miyazima **5** (1950), 844

On the Effect of γ-Ray to the Cosmic-Ray Underground (L) ....
..........................S. Ogawa & S. Miura **5** (1950), 897

The Lateral and Angular Distribution of Cascade Showers (L) ....
......................J. Nishimura & K. Kamata **5** (1950), 899

Interpretation of the Second Maximum of Rossi Curve ....
...............Satio Hayakawa & Jun Nishimura **5** (1950), 948

Nuclear Disintegration caused by Cosmic-Rays ....
.... Yoichi Fujimoto & Satio Hayakawa **6** (1951), 96

On the Star Production by Cosmic-Ray Underground (L) ....
..........................S. Miura & S. Ogawa **6** (1951), 251

Remarks on the Production of Cosmic-Ray Mesons (L)...........
...............................Y. Yamaguchi **6** (1951), 260

On the Accuracy of the Molière Function. I (L) ....
.... J. Nishimura & K. Kamata **6** (1951), 262

Elektronoj Ekvilibraj kun Mezonoj en Malalta Atmosfero (L) .....
.... Y. Takahashi & T. Miyazima **6** (1951), 431

Note on Very Large Cosmic-Ray Stars. II ....
.............................Yoshio Yamaguchi **6** (1951), 529

On the Accuracy of the Molière Function. II (L)................
.....................J. Nishimura & K. Kamata **6** (1951), 628

Note on the Cascade Function for Heavy Elements (L) ....
.........................J. Nishimura & K. Ida **6** (1951), 905

Nucleonic Components at High Altitudes (L) ....
.....................K. Sakihama & S. Takagi **6** (1951), 1017

41 Cosmic Radiation *(continued)*

On the Nucleonic Components producing Large Cosmic-Ray Bursts under Thick Shield .... Tadashi Kameda & Masami Wada **7** (1952), 1
(*cf.* Errata: Vol. 7, p. 422)

The Burst Production by the μ-Meson (L) .... H. Komori, K. Miyanaga & S. Ogawa **7** (1952), 122

On the Theory of Cascade Showers. I .... Jun Nishimura & Koichi Kamata **7** (1952), 185

Seasonal Variation of Large Cosmic-Ray Bursts (L) .... T. Kameda & M. Wada **7** (1952), 586

The Transition Effect of the Star Production (L) .... H. Komori **8** (1952), 134

On the Cosmic-Ray Bursts Underground ——*The Interaction of π-Meson with Nucleon*—— .... Shuzo Ogawa **8** (1952), 205

Slow Neutrons in the Cosmic Radiation. I .... Yoichi Fujimoto & Taro Tamura **8** (1952), 221

Diffusion of the Nucleonic Component in the Atmosphere (L) .... A. Ueda & H. Hasegawa **8** (1952), 262

Propagation of the Cosmic Radiation through Interstellar Space (L) .... S. Hayakawa **8** (1952), 571

On the Origin of Primary Cosmic Radiation .... Tokuji Matsumoto & Masao Sugawara **9** (1953), 1

Numerical Work on the Fluctuation Problem of Electron Cascades (L) .... A. Ramakrishnan & P. M. Mathews **9** (1953), 679

Cloud Chamber Study of Nuclear Interactions in Lead and Carbon of Secondaries emitted in Cosmic-Ray Penetrating Showers (L) .... I. Kita & O. Minakawa **10** (1953), 237

The Absolute Intensity of Cosmic Rays at Geomagnetic Latitude 25° N (L) .... Y. Kitamura & O. Minakawa **10** (1953), 239

Studies on the Stochastic Problem of Electron-Photon Cascades .... Alladi Ramakrishnan & P. M. Mathews **11** (1954), 95

Note on the Contribution of the Single Scattering to the Lateral Structure of Cascade Showers (L) .... J. Nishimura & K. Kamata **11** (1954), 608

41 Cosmic Radiation *(continued)*

On the Plural-Multiple Model of High Energy Meson Showers.....
..........................Yoshinosuke Terashima **13** (1955), 1

Fluctuations in the Number of Photons in an Electron-Photon Cascade......Alladi Ramakrishnan & S. K. Srinivasan **13** (1955), 93

On the Penetrating Showers produced in Paraffin and Graphite (L)
...I. Miura, T. Matano, Y. Toyoda & T. Murayama **13** (1955), 115

The Energy Balance of Cosmic Rays.......Hiroo Komori **13** (1955), 205

The Non-Mesonic Photonuclear Reactions initiated by High Energy μ-Mesons (L)..
S. Kaneko, T. Kubozoe, M. Okazaki & M. Takahata **13** (1955), 461

A Possible Effect of Cosmic Rays on Celestial Chemical Composition (L)..............................S. Hayakawa **13** (1955), 464

The Magnetic Field in the Vicinity of the Solar System (L)......
..............................W. L. Kraushaar **14** (1955), 77

High Latitude Impact Zones for Solar Cosmic Rays (L) ....
..............................W. L. Kraushaar **14** (1955), 78

Positive Temperature Effect of Cosmic Rays.......Satio Hayakawa,
Kensai Ito & Yoshinosuke Terashima **14** (1955), 497

Supernova Origin of Cosmic Rays........Satio Hayakawa **15** (1956), 111

Interaction of π-Mesons with π-Mesons (L).......Z. Koba **15** (1956), 294

The Atmospheric Effects on the Intensity of High Energy μ-Mesons..
T. Murayama, K. Murakami, R. Tanaka & S. Ogawa **15** (1956), 421

Remarks on the Pion-Pion Interaction..........Ziro Koba **15** (1956), 461

Hydrodynamical Theory of the Multiple Production of Particles in High Energy Nucleon-Nucleus Collision (L)................
............................C. Iso & M. Sato **15** (1956), 510

Energy Loss of a Charged Particle Traversing Ionized Gas and Injection Energies of Cosmic Rays ....
.... Satio Hayakawa & Kazuo Kitao **16** (1956), 139
(*cf.* Errata: Vol. 17, p. 129)

On the Energy Dependence of the Cross Section for the Production of the Penetrating Shower Underground (L) ....
..... S. Higashi, M. Oda, T. Oshio, H. Shibata, K. Watanabe
& Y. Watase **16** (1956), 250

41 Cosmic Radiation *(continued)*

On the Nuclear Interaction of μ-Meson below Ground (L) .... T. Kitamura & M. Oda **16** (1956), 252

The Creation of an Electron Pair by a Fast Charged Particle .... Toshiyuki Murota, Akira Ueda & Hajime Tanaka **16** (1956), 482

Note on Models of Multiple Meson Production at Extremely High Energy .... Ziro Koba **17** (1957), 288

On the Air Shower Core (L) .... S. Hasegawa **17** (1957), 603

Acceleration of Cosmic Rays by Hydromagnetic Wave (L) .... Y. Terashima, K. Kitao & K. Ogawa **17** (1957), 814

On the Structure of Extensive Air Showers .... Akira Ueda & Naofumi Ogita **18** (1957), 269

On the Production of Mesons in Hydrogen and Carbon above 10 GeV. II (L) .... Y. Watase, S. Mitani, K. Suga & Y. Tanaka **18** (1957), 314

Ionization Loss Near the Origin of an Electron Pair of Very High Energy .... Iwao Mito & Hiroshi Ezawa **18** (1957), 437

Efficiency of Acceleration of Relativistic Particles in the Crab Nebula (L) .... S. Hayakawa & Y. Terashima **18** (1957), 555

Multiple Production of Particles and Hydrodynamical Aspect of Quantum Theory of Fields .... Mikio Namiki & Chikashi Iso **18** (1957), 591

High Energy Gamma-Rays from the Crab Nebula (L) .... S. Hayakawa **19** (1958), 219

The Non-Indication of the "Anomalous" Scattering of Mu-Mesons (L) .... S. Fukui, T. Kitamura & Y. Watase **19** (1958), 348

On the Lateral Distribution of the Electron Component in Extensive Air Showers (L) .... A. Ueda & N. Ogita **19** (1958), 582

An Analysis of Experimental Data on Extensive Air Showers .... Saburo Miyake **20** (1958), 844

On a Possible Interpretation of the Penetrating Component of the Cosmic Ray .... Hideki Yukawa **Sup. 1** (1955), 11

On the Meson Theory of the Penetrating Component of Cosmic Radiation .... Minoru Kobayasi **Sup. 1** (1955), 137

41 Cosmic Radiation *(continued)*

On the Temperature Effect of Underground Cosmic Radiation...... ....Tatuoki Miyazima **Sup. 1** (1955), 212

Cosmic-Ray Underground...........Satio Hayakawa **Sup. 1** (1955), 213

Origin of Cosmic Rays ....Satio Hayakawa, Kensai Ito & Yoshinosuke Terashima **Sup. 6** (1958), 1

The Lateral and the Angular Structure Functions of Electron Showers.....Koichi Kamata & Jun Nishimura **Sup. 6** (1958), 93

61 Atomic Structure and Spectrum

Elastic Collison Cross Section of Oxygen Atom for Slow Electron .. .. Takahiko Yamanouchi **2** (1947), 33

Interval Formula for Multiplets of Atomic Energy Levels. I....... .... Gentaro Araki **3** (1948), 152

Interval Formula for Multiplets of Atomic Enegry Levels. II .... Gentaro Araki **3** (1948), 262

Analytical Expression of Self-Consistent Functions and Doublet Intervals for F I, Ne II, Mg IV and Al V ....Wataro Watari **4** (1949), 42

Intervals of Cl I, A II, K III, Ca IV ^2P...................... ....Wataro Watari **4** (1949), 312

Triplet Intervals of Beryllium and Calcium ....Wataro Watari **4** (1949), 314

Intervals of Si IV ^2P Levels...........Simpei Tutihasi **4** (1949), 317

On the Eigenvalue Problem of Hydrogen (L) .... G. Araki **4** (1949), 366

Effect of Nuclear Motion on the Fine Structure of Hydrogen (L) .. ..T. Isidu **5** (1950), 307

Effects of Nuclear Motion on the Fine and Hyperfine Structure of Hydrogen (L) ....T. Isidu **5** (1950), 904

Effects of Nuclear Motion on the Fine and the Hyperfine Structure of Hydrogen. I ....Takehiko Isidu **6** (1951), 48

Effects of Nuclear Motion on the Fine and the Hyperfine Structure of Hydrogen. II..................Takehiko Isidu **6** (1951), 154

61 Atomic Structure and Spectrum (*continued*)

Recoil Effect on Electron-Proton Forces and Inapplicability of Energy Law............Gentaro Araki & Sigeru Huzinaga **6** (1951), 673

Ionization of Gas by Electrons....................Julian K. Knipp, Tetsuo Eguchi, Masao Ohta & Shozo Nagata **10** (1953), 24

Spin-Spin and Spin-other-Orbit Interactions ....Hisashi Horie **10** (1953), 296

The Orbit-Orbit Interaction (L) ....S. Yanagawa **13** (1955), 559

He-He Repulsive Potential. I ....Michiko Sakamoto & Eiichi Isiguro **15** (1956), 37

On the Relativistic Thomas-Fermi Atom....G. S. Murthy **15** (1956), 473

He-He Repulsive Potential (L)..............S. Huzinaga **17** (1957), 512

Quantum-Electrodynamical Corrections to Energy-Levels of Helium.....................................Huzihiro Araki **17** (1957), 619

On the Ground Level Splitting of Mn^{++} and Fe^{+++} in Nearly Cubic Crystalline Field................Hiroshi Watanabe **18** (1957), 405

Low Energy Electron-Hydrogen Scattering.........Takashi Ohmura, Yasuo Hara & Takahiko Yamanouchi **20** (1958), 82

The Interaction between Two Normal Helium Atoms——*A Consistent Treatment*—— ....Tasuke Hasino & Sigeru Huzinaga **20** (1958), 631

62 Molecular Structure and Spectrum

Pri la Teorio Alojteorimaniera de Feromagnetismo ....Kei Yosida & Shôhei Miyahara **3** (1948), 74

On the Interaction between Nuclear-Vibrational and Electronic States (L).....................H. Narumi & Y. Takano **5** (1950), 160

The Mutual Repulsive Potential between Argon Atoms ....Makoto Kunimune **5** (1950), 412

Electronic States of C_2-Molecule. I —*Interaction between p-Electrons*—— ....Gentaro Araki, Simpei Tutihasi & Wataro Watari **6** (1951), 135
(*cf.* Errata: Vol. 6, p. 446)

On the Intervals of Na ^2D and Cu ^2F (L) ....G. Araki & S. Tutihasi **6** (1951), 430

62 **Molecular Structure and Spectrum** (*continued*)

Electronic States of C_2-Molecule. II——*Effect of 2s-Shells*—— ....
.................Gentaro Araki & Wataro Watari **6** (1951), 945

Electronic States of C_2-Molecule. III——*Numerical Values and Reduction Formulas of Integrals*—— ....
.................Gentaro Araki & Wataro Watari **6** (1951), 961

Electronic States of Ethylene Molecule.........................
.... Tomokazu Murai **7** (1952), 345

On the Inelastic Collision between Molecules. I..................
.............................Kazuo Takayanagi **8** (1952), 111

Interaction of π-Electrons in the Acetylene Molecule ....
.............Takashi Nakamura, Kimio Ohno, Masao Kotani
& Katsunori Hijikata **8** (1952), 387

On the Inelastic Collision between Molecules. II
——*Rotational Transition of H_2-Molecule in the Collision with another H_2-Molecule*——.. Kazuo Takayanagi **8** (1952), 497
(*cf.* Errata: Vol. 10, p. 369)

Electronic States of F_2- and O_2-Molecules..Wataro Watari **8** (1952), 524

Calculation of Heteronuclear Molecular Integrals.................
...............Tomokazu Murai & Gentaro Araki **8** (1952), 615

Molecular Structure and Absorption Spectra of Carotenoids ....
...............Gentaro Araki & Tomokazu Murai **8** (1952), 639
(*cf.* Errata: Vol. 10, p. 700)

On the Inelastic Collision between Molecules. III
——*Rotational Transitions in H_2-Gas*—— ....
..........Kazuo Takayanagi & Tadashi Kishimoto **9** (1953), 578
(*cf.* Errata: Vol. 10, p. 369)

On the Electronic Structure of LiH——*Atomic Orbital Approach with Configurational Interaction*—— (*L*)................
.... K. Tomita & K. Fukui **10** (1953), 362

Interaction between Electrons in One-Dimensional Free-Electron Model with Application to Absorprtion Spectra of Cyanine Dyes....
.... Gentaro Araki & Huzihiro Araki **11** (1954), 20

The Theory of Collisions between Two Diatomic Molecules........
.............................Kazuo Takayanagi **11** (1954), 557

62 Molecular Structure and Spectrum *(continued)*

Collisions between Non-Spherical Molecules. I——*Molecular Collisions in Hydrogen Gas at Lower Temperatures*——............................ Kazuo Takayanagi & Kimio Ohno **13** (1955), 243

On the Quenching of Molecular Rotation of Ortho-Hydrogen in Solid State............................Tuto Nakamura **14** (1955), 135

A Device to avoid Difficult Integrals in Calculations on Molecular Structure (L)........................S. Huzinaga **14** (1955), 492

He-He Repulsive Potential. I.... Michiko Sakamoto & Eiichi Isiguro **15** (1956), 37

Absorption Spectra of Unsymmetrical Cyanines.....................................Gentaro Araki & Sigeru Huzinaga **15** (1956), 307

Interaction between Electrons in Two-Dimensional Free-Electron Model for Conjugated Systems..........Sigeru Huzinaga **15** (1956), 495

One-Center Expansion of Molecular Wave Function. I..Sigeru Huzinaga **15** (1956), 501

Free-Electron Model of Benzene...........Gentaro Araki **16** (1956), 212

Free-Electron Ring Model of Polyancenes...Gentaro Araki **16** (1956), 265

One-Center Expansion of Molecular Wave Function. II——*Lower Excited States of H_2*——........Sigeru Huzinaga **17** (1957), 162

One-Center Expansion of Molecular Wave Function. III——*He-He Repulsive Potential*——..........Sigeru Huzinaga **17** (1957), 169

The Repulsive Potential between Two Normal Helium Atoms......................................Sigeru Huzinaga **18** (1957), 139

On the Pressure Shift of the Inversion Frequency of Ammonia (L)... K. Tomita **18** (1957), 316

Electronic Energy Levels of Polyene Chains......................................Sigeru Huzinaga & Tasuke Hasino **18** (1957), 649

Molecular Orbital Treatment of $1s\sigma 2p\sigma\,{}^3\Sigma_u$ State of H_2 (L)..S. Huzinaga **19** (1958), 125

Note on Energy Levels of Polyatomic Molecules (L).. S. Datta Majumdar **19** (1958), 452

Reevaluation of the Electric Quadrupole Moment of the Deuteron (L)......H. Narumi, T. Watanabe & O. Nakahara **19** (1958), 591

62 Molecular Structure and Spectrum *(continued)*

On the Orbital Approach to the Many-Electron Problem in Molecule
........................Sigeru Huzinaga **20** (1958), 15

Charge-Transfer Forces in Molecular Compounds ....
........................Shigeyuki Aono **20** (1958), 133

The Interaction between Two Normal Helium Atoms——*A Consistent Treatment*—— ....
...............Tasuke Hasino & Sigeru Huzinaga **20** (1958), 631

Molecular Processes induced by μ^- Mesons in Hydrogen Bubble Chamber. I——*Transfer Process of μ^- Meson from Proton to Deuteron*——(L)..................................
...........M. Shimizu, Y. Mizuno & T. Izuyama **20** (1958), 777

63 Electron Theory of Solids

Theory of the *F*-Centers of Coloured Alkali Halide Crystals. I
——*Structure of F-Absorption Bands*—— ....
..............................Toshinosuke Muto **4** (1949), 181

Theory of the *F*-Centers of Coloured Alkali Halides Crystal. II
——*Electronic Structure of F-Centers. General Theory*——..
..............................Toshinosuke Muto **4** (1949), 243

On the Lattice Polarization induced by Electronic Motion ....
.... Mokichiro Nogami **5** (1950), 56

Theory of Color Centers in Ionic Crystals. I——*Electronic States of F-Centers in Alkali Halides*—— ....
.................Teturo Inui & Yasutada Uemura **5** (1950), 252

The Conduction Electron with Low Energy in Ionic Crystals (L)..
......................................A. Morita **5** (1950), 329

On the Conception of the Energy Band in the Perturbed Periodic Potential (L)...S. Katsura, T. Hatta & A. Morita **5** (1950), 330

Theory of Color Centers in Ionic Crystals. II——*The Temperature Dependence of F-Bands in Alkali Halides*—— ....
.... Teturo Inui & Yasutada Uemura **5** (1950), 395

Theory of the Temperature Effect of Electronic Energy Bands in Crystals....... Toshinosuke Muto & Seiichi Ôyama **5** (1950), 833
(*cf.* Errata: Vol. 6, p. 445)

63 Electron Theory of Solids *(continued)*

Theory of the Temperature Effect of Electronic Energy Bands in Crystal. II.... Toshinosuke Muto & Seiichi Ôyama **6** (1951), 61
(*cf.* Errata: Vol. 6, p. 446)

On the Interaction of the Lattice Vibrations with the Conduction Electrons (L) .... T. Nishiyama **6** (1951), 897

On the Electronic Structures of the *M*-Centers in Alkali-Halide Crystals ....Teturo Inui, Yasutada Uemura & Yutaka Toyozawa **8** (1952), 355

On the Lattice Vibration and the Effective Mass of Conduction Electrons..................Hideo Kanazawa, Shoichiro Koide & Tamazi Noguchi **9** (1953), 288

On the Interaction of Additive Electrons with the Polarization in Ionic Crystals. I ....
Yutaka Toyozawa, Teturo Inui & Yasutada Uemura **9** (1953), 563

On the Electronic Polaron State (L) .... Y. Toyozawa **9** (1953), 677

On the Interaction of Additive Electrons with the Polarization in Ionic Crystals. II ....
Yutaka Toyozawa, Teturo Inui & Yasutada Uemura **10** (1953), 57

On the Interaction of Electrons with Lattice Vibrations ....
..............................Hideo Kanazawa **10** (1953), 275

On the Radiative Interaction of Phonon Field with Electrons (L)..
.................................H. Kanazawa **10** (1953), 471

On the Atom-Exciton Interaction (L)...........T. Ohta **10** (1953), 474

Note on the Slow Electrons in a Polar Crystal ....
.... Eijiro Haga **11** (1954), 449

Some Generalization of the Theory of Scattering with Application to Slow Electrons in Polar Crystals (L)....A. Morita **11** (1954), 609

Electronic Structure of Graphite and Boron Nitride (L)...........
.... K. Ariyama & S. Mase **12** (1954), 244

An Interpretation for the Electronic Conductivity and Diamagnetic Susceptibility of Graphite (L)..........................
.... K. Ariyama & S. Mase **12** (1954), 246

Excitation of Metal Electrons by an Energetic Primary Particle (L)
....................................T. Shindo **12** (1954), 406

63 Electron Theory of Solids (*continued*)

Theory of the Electronic Polaron and Ionization of a Trapped Electron by an Exciton .... Yutaka Toyozawa **12** (1954), 421

The Method of Generating Function applied to Radiative and Non-Radiative Transition of a Trapped Electron in a Crystal (L) .... R. Kubo & Y. Toyozawa **12** (1954), 805

On the Multiple Scattering of an Electron in Lattice (L) .... N. Fukuda & S. Otake **13** (1955), 110

Application of the Method of Generating Function to Radiative and Non-Radiative Transitions of a Trapped Electron in a Crystal .... Ryogo Kubo & Yutaka Toyozawa **13** (1955), 160

On the Theory of Plasma Oscillations in Metals .... Hideo Kanazawa **13** (1955), 227

Self-Energy of Slow Polaron and Variational Method (L) .... E. Haga **13** (1955), 555

A Method of Calculation of Electrical Conductivity (L) .... H. Nakano **15** (1956), 77

Theory of Electron Multiplication in Silicon .... Jiro Yamashita **15** (1956), 95

Quantum Statistical Mechanics of Electron-Phonon System .... Hiroshi Ichimura **15** (1956), 151

On the Theory of Thermal Conductivity of Pure Metals at Low Temperatures (L) .... P. G. Klemens **16** (1956), 154

Coulomb Interactions and the Diamagnetism of Free Electrons. II .... Hideo Kanazawa **17** (1957), 1

Note on Bloch-Nordsieck Transformation and Electron-Lattice Interaction (L) .... H. Kanazawa **17** (1957), 304

Interaction with the Sound Quanta in a System consisting of Two Kinds of Charged Particles—*The Method of Supplementary Variables*—(L) .... Z. Galasiewicz **17** (1957), 613

Effect of Long-Range Correlations on Free Electron Diamagnetism (L) .... B. Donovan, H. Kanazawa & N. H. March **17** (1957), 813

On the Electron-Lattice Interaction in Non-Polar Semiconductors .... Shigeharu Koshino **18** (1957), 23

63 **Electron Theory of Solids** *(continued)*

Theory of Collective Oscillation of Electrons in Solids .... Yoshi H. Ichikawa **18** (1957), 247

On the Subsidiary Conditions in the Bohm-Pines Theory of Electron Plasma .... Hideo Kanazawa **18** (1957), 287

On the Exciton Problem in Insulating Crystals .... Yosihisa Takeuti **18** (1957), 421

Band Theory of Superexchange Interaction .... Jun Kondo **18** (1957), 541

A Comment on Bardeen's Theory of Superconductivity (L) .... S. Nakajima & T. Kasuya **18** (1957), 662
(*cf.* Errata: Vol. 20, p. 783)

Effect of Electron Exchange on the Dispersion Relation of Plasma Oscillations .... Hideo Kanazawa & Sho-ichiro Tani **19** (1958), 153

The Exciton-Lattice Interaction and the Line Shape of the Exciton Absorption Band (L) .... Y. Toyozawa **19** (1958), 214

Theory of Cohesive Energy of LiH Crystal——*The Method of Semi-Localized Crystalline Orbital (SLCO). I* .... Akira Morita & Kenji Takahashi **19** (1958), 257

On the Recombination Processes by the Auger Effect (L) .... M. Nagae **19** (1958), 339

On the Auger Effect in the Deep Traps in Si (L) .... M. Nagae **19** (1958), 341

Effect of Electron-Electron Scattering on Hall Mobility of Electrons in *n* Semiconductors (L) .... M. S. Sodha & P. C. Eastman **19** (1958), 344

Theory of Cohesive Energies and Energy-Band Structures of Diamond-Type Valence Crystals——*The Method of SLCO. II*—— .... Akira Morita **19** (1958), 534

A Possible Size Effect on the Plasma Oscillation of Electrons in Solids (L) .... Y. H. Ichikawa **19** (1958), 585

Theory of Line-Shapes of the Exciton Absorption Bands .... Yutaka Toyozawa **20** (1958), 53

On the Positronium in Metals (L) .... H. Kanazawa **20** (1958), 400

63 Electron Theory of Solids (*continued*)

Quantum Statistical Mechanics of Electron-Phonon System. II——*Specific Heat and Spin Paramagnetic Susceptibility*—— .... Hiroshi Ichimura **20** (1958), 415

Effect of the Non-Relativistic Recoil of a Source Particle in Quantum Field Theories .... Jun'ichi Osada & Haruyuki Fujino **20** (1958), 487

Electronic Structure of the Exciton in Ionic Crystal ——*Further Discussion of a Localized Exciton* (*Zero-th Order Description*) *and General Formulation of a Moving Exciton in Alkali Halides*—— .... Toshinosuke Muto, Seiichi Ôyama & Hiroshi Okuno **20** (1958), 804

Magnetic Properties of the Iron-Group Anhydrous Chlorides .... Junjiro Kanamori **20** (1958), 890

Influence of the Exchange and Correlation on the Electron-Phonon Interaction in Metals (L) .... T. Toya **20** (1958). 971

Electrical Conductivity of Monovalent Metals (L) .... T. Toya **20** (1958), 973

Normal Vibrations of Copper (L) .... T. Toya **20** (1958), 974

64 Magnetic Properties of Matter

On the Theory of Ferromagnetism at 0°K .... Shôhei Miyahara **2** (1947), 25

On the Angular Momentum of the Flügge's Nuclear Liquid Drop Model (A) .... M. Nogami **2** (1947), 92

Remarks on the Ferromagnetism of the Semi-Conductors (L) .... T. Yamamoto & S. Takagi **2** (1947), 160

Pri la Teorio Alojteorimaniera de Feromagnetismo .... Kei Yosida & Syôhei Miyahara **3** (1948), 74

Pri la Teorio de Kolektivaj Elektronoj de Feromagnetismo .... Syôhei Miyahara **4** (1949), 142

On the Relation between Heisenberg's Theory of Ferromagnetism and that of Slater .... Kei Yosida **4** (1949), 151

A Note on the Theory of Ferromagnetism .... Haruo Shimazu **4** (1949), 160

64 Magnetic Properties of Matter *(continued)*

Theory of Antiferromagnetism and Antiferromagnetic Resonance Absorption. I .... Takeo Nagamiya **6** (1951), 342

Theory of Antiferromagnetism and Antiferromagnetic Resonance Absorption. II .... Takeo Nagamiya **6** (1951), 350

Note on the Magnetic Properties of the FeS_n System .... Kei Yosida **6** (1951), 356

On the Antiferromagnetism of Single Crystals .... Kei Yosida **6** (1951), 691

A Commentary to Yosida's Theory on FeS_n (L) .... S. Miyahara **6** (1951), 1026

Theory of Some Magnetic Properties of Cobalt Tutton Salts .... Kenjiro Kambe, Shoichiro Koide & Tunemaru Usui **7** (1952), 15

On the Antiferromagnetism of $CuCl_2 \cdot 2H_2O$ Single Crystal .... Kei Yosida **7** (1952), 25

On the Spin Wave Theory of Magnetic Susceptibility and Resonance Absorption in Antiferromagnetics .... Tuto Nakamura **7** (1952), 539

Anisotropy in the Antiferromagnetic MnO_2 (L) .... K. Yosida **8** (1952), 259

On the Magnetism of Magnetic Compounds—*General Treatment of Superexchange Interaction*— .... Masao Shimizu **8** (1952), 416

On the Spin Wave Theory of Bloch Wall .... Takehiko Oguchi **9** (1953), 7

Transition Factor in Superexchange Interaction Matrix (L) .... T. Ohta **9** (1953), 85

A Theory of Antiferromagnetism .... Takehiko Oguchi & Yukio Obata **9** (1953), 359

The Heisenberg Theory of Ferromagnetism of the Crystal constituted by the Atoms with Spin One .... Huzio Nakano **9** (1953), 403

On the Origin of the Anisotropy Energy of $CuCl_2 \cdot 2H_2O$ .... Tôru Moriya & Kei Yosida **9** (1953), 663

64 Magnetic Properties of Matter *(continued)*

Interaction between Spin Waves and Conduction Electrons (L) .... A. Kondoh **10** (1953), 117

Antiferromagnetism. The Kagomé Ising Net .... Kenji Kanô & Shigeo Naya **10** (1953), 158

On the Spin-Lattice Relaxation at Extremely Low Temperatures (L) .... K. Sugihara **10** (1953), 234

On the Magnetic Structure of Manganese Antimonide (L) .... K. Komatu **10** (1953), 579

On the Spontaneous Magnetizations of Honeycomb and Kagomé Ising Lattices .... Shigeo Naya **11** (1954), 53

On the Magnetic Anisotropy of FeF_2 .... Kazuo Niira & Takehiko Oguchi **11** (1954), 425

An Interpretation for the Electronic Conductivity and Diamagnetic Susceptibility of Graphite (L) .... K. Ariyama & S. Mase **12** (1954), 246

The Relaxation Process in Ferromagnetic Resonance Absorption (L) .... T. Kasuya **12** (1954), 802

The Relaxation Process in Ferromagnetic Resonance Absorption ——*The Effect of the Conduction Electron*——(L) .... T. Kasuya **12** (1954), 803

A Note on Superexchange Interaction (L) .... J. Yamashita **12** (1954), 808

Statistical Models of Ferrimagnetism .... Itiro Syozi & Huzio Nakano **13** (1955), 69

On the Thermal Conductivity of Ferromagnetics (L) .... H. Sato **13** (1955), 119

On the Para- and Antiferromagnetic States of Cobalt Fluoride...... .... Tuto Nakamura & Hiroshi Taketa **13** (1955), 129

A Theory of Antiferromagntism. II..... Takehiko Oguchi **13** (1955), 148

Note on the Spin Wave Theory of Antiferromagnetism.......... .... Junjiro Kanamori & Kei Yosida **14** (1955), 423

Coulomb Interactions and the Diamagnetism of Free Electrons...... .... Hideo Kanazawa **15** (1956), 273

64 Magnetic Properties of Matter (*continued*)

A Theory of Metallic Ferro- and Antiferromagnetism on Zener's Model .... Tadao Kasuya **16** (1956), 45

Electrical Resistance of Ferromagnetic Metals .... Tadao Kasuya **16** (1956), 58

Theory of the Magnetic Properties of Ferrous and Cobaltous Oxides. I .... Junjiro Kanamori **17** (1957), 177

Theory of the Magnetic Properties of Ferrous and Cobaltous Oxides. II .... Junjiro Kanamori **17** (1957), 197

Antiferromagnetism of Zn-Ferrite .... Masashi Tachiki & Kei Yosida **17** (1957), 223

On the Origin of the Magnetic Anisotropy Energy of Ferrites .... Kei Yosida & Masashi Tachiki **17** (1957), 331

On the Magnetic Properties of Cubic Cerium .... Tsuyoshi Murao & Takeo Matsubara **18** (1957), 215

Ferromagnetism of a Gas of Hard Sphere Fermions with Spin 1/2 (L) .... T. Morita, R. Abe & S. Misawa **18** (1957), 326

On the Ground Level Splitting of Mn^{++} and Fe^{+++} in Nearly Cubic Crystalline Field .... Hiroshi Watanabe **18** (1957), 405

On the Line Width in Ferromagnetic Resonance (L) .... S. Takeno **18** (1957), 448

Band Theory of Superexchange Interaction .... Jun Kondo **18** (1957), 541

On the Spin-Lattice Relaxation Process in Ferromagnets (L) .... F. Terasaki & I. Mannari **18** (1957), 552

Remarks on Spin-Wave Theory for the Ferromagnetic Exchange Problem .... Isao Mannari **19** (1958), 201

Quantization of Spin Wave Field (L) .... I. Mannari **19** (1958), 451

The Magnetic Properties of the Praseodymium and the Neodymium Metals .... Tsuyoshi Murao **20** (1958), 277

Quantum Statistical Mechanics of Electron-Phonon System. II——*Specific Heat and Spin Paramagnetic Susceptibility*—— .... Hiroshi Ichimura **20** (1958), 415

Indirect Coupling of Nuclear Spins in Antiferromagnet with Particular Reference to MnF_2 at Very Low Temperatures .... Tuto Nakamura **20** (1958), 542

64 Magnetic Properties of Matter (*continued*)

Bose-Einstein Lattice Gases equivalent to the Heisenberg Model of Ferro-, Antiferro- and Ferrimagnetism …… Tohru Morita **20** (1958), 614

Bose-Einstein Lattice Gas Theory of Ferromagnetism …… Tohru Morita **20** (1958), 728

Magnetic Properties of the Iron-Group Anhydrous Chlorides …… Junjiro Kanamori **20** (1958), 890

Superconductivity of Ferromagnetic Metals (L) …… T. Kasuya **20** (1958), 980

65 Electrical Properties of Matter

On the Theory of the Dielectric, Piezoelectric, and Elastic Properties of $NH_4H_2PO_4$ …… Takeo Nagamiya **7** (1952), 275

The Theory of the Dielectric Constant of Ionic Crystals. I …… Jiro Yamashita **8** (1952), 280

The Quantum-Statistical Theory of Transport Phenomena. I——*On the Boltzmann-Uehling-Uhlenbeck Equation*—— …… Hazime Mori & Syu Ono **8** (1952), 327

The Quantum-Statistical Theory of Transport Phenomena. II——*On the Theory of Metallic Conductivity*—— …… Hazime Mori **9** (1953), 473

An Interpretation for the Electronic Conductivity and Diamagnetic Susceptibility of Graphite (L) …… K. Ariyama & S. Mase **12** (1954), 246

Theory of the Electronic Polaron and Ionization of a Trapped Electron by an Exciton …… Yutaka Toyozawa **12** (1954), 421

On the Conductivity of Non-Polar Crystals in the Strong Electric Field. I …… Jiro Yamashita & Mitsukuni Watanabe **12** (1954), 443

The Theory of the Dielectric Constant of Ionic Crystals. II——*Effect of Temperature*—— …… Jiro Yamashita **12** (1954), 454

On Interactions among Ions of a $BaTiO_3$ Crystal and on Its 180° and 90° Type Domain Boundaries …… Wataru Kinase **13** (1955), 529

65 Electrical Properties of Matter *(continued)*

On the Theory of Thermal Conductivity of Monovalent Metals . . . . Tadao Kasuya **13** (1955), 561

A Method of Calculation of Electrical Conductivity (L) . . . . H. Nakano **15** (1956), 77

Theory of Electron Multiplication in Silicon . . . . Jiro Yamashita **15** (1956), 95

Quantum Statistical Mechanics of Electron-Phonon System . . . . Hiroshi Ichimura **15** (1956), 151

Coulomb Interactions and the Diamagnetism of Free Electrons . . . . Hideo Kanazawa **15** (1956), 273

Electrical Resistance of Ferromagnetic Metals . . . . Tadao Kasuya **16** (1956), 58

Energy Loss of a Charged Particle Traversing Superconductors . . . . Satio Hayakawa & Kazuo Kitao **16** (1956), 131
(*cf.* Errata: Vol. 17, p. 129)

The Energy Band Structure of the Metallic Copper
——*The Orthogonalized Plane Wave Method*—— . . . . Mitsuru Fukuchi **16** (1956), 222

On the Recombination Processes by the Auger Effect (L) . . . . M. Nagae **19** (1958), 339

On the Auger Effect in the Deep Traps in Si (L) . . . . M. Nagae **19** (1958), 341

Effect of Electron-Electron Scattering on Hall Mobility of Electrons in n Semiconductors (L) . . . . M. S. Sodha & P. C. Eastman **19** (1958), 344

On Quantum Theory of Transport Phenomena——*Steady Diffusion*—— . . . . Sadao Nakajima **20** (1958), 948

Influence of the Exchange and Correlation on the Electron-Phonon Interaction in Metals (L) . . . . T. Toya **20** (1958), 971

Electrical Conductivity of Monovalent Metals (L) . . . . T. Toya **20** (1958), 973

Normal Vibrations of Copper (L) . . . . T. Toya **20** (1958), 974

66 Optical Properties of Matter

Note on the Light Absorption in the Insulating Crystals (L) .... T. Ohta **10** (1953), 472

On the Atom-Exciton Interaction (L) .... T. Ohta **10** (1953), 474

Theory of the Electronic Polaron and Ionization of a Trapped Electron by an Exciton .... Yutaka Toyozawa **12** (1954), 421

The Method of Generating Function applied to Radiative and Non-Radiative Transition of a Trapped Electron in a Crystal (L) .... R. Kubo & Y. Toyozawa **12** (1954), 805

Application of the Method of Generating Function to Radiative and Non-Radiative Transitions of a Trapped Electron in a Crystal .... Ryogo Kubo & Yutaka Toyozawa **13** (1955), 160

On Feynman's Theory of Polarons (L) ...... K. Yamazaki **15** (1956), 508

On the Pressure Shift of the Inversion Frequency of Ammonia (L) .... K. Tomita **18** (1957), 316

The Exciton-Lattice Interaction and the Line Shape of the Exciton Absorption Band (L) .... Y. Toyozawa **19** (1958), 214

Theory of Line-Shapes of the Exciton Absorption Bands .... Yutaka Toyozawa **20** (1958), 53

Electronic Structure of the Exciton in Ionic Crystal ——*Further Discussion of a Localized Exciton (Zero-th Order Discription) and General Formulation of a Moving Exciton in Alkali Halides*—— .... Toshinosuke Muto, Seiichi Ôyama & Hiroshi Okuno **20** (1958), 804

67 Resonance and Relaxation in Solids and Liquids

Note on the Magnetic Resonance Absorption in Paramagnetic Salts (L) .... K. Yosida **5** (1950), 1047

Theory of Antiferromagnetism and Antiferromagnetic Resonance Absorption. I .... Takeo Nagamiya **6** (1951), 342

Theory of Antiferromagnetism and Antiferromagnetic Resonance Absorption. II .... Takeo Nagamiya **6** (1951), 350

Microwave Resonance in Ferrimagnetic Substance (L) .... N. Tsuya **7** (1952), 263

67 Resonance and Relaxation in Solids and Liquids *(continued)*

Theory of the Antiferromagnetic Resonance Absorption in $CuCl_2 \cdot 2H_2O$ .... Kei Yosida **7** (1952), 425

On the Spin Wave Theory of Magnetic Susceptibility and Resonance Absorption in Antiferromagnetics .... Tuto Nakamura **7** (1952), 539

The State of Solid Methane as inferred from Nuclear Magnetic Resonance (L) .... K. Tomita **8** (1952), 138

Theory of the Nuclear Magnetic Relaxation in Crystalline Solids. I —*Direct Process*— .... Toshinosuke Muto & Mitsukuni Watanabe **8** (1952), 231

Temperature Effect on the Paramagnetic Resonance in Crystals .... Kenjiro Kambe & Tunemaru Usui **8** (1952), 302

On the Equivalence of Moment Method and Fourier Transform Method in the Theory of Spectral Line Shape (L) .... I. Yokota **8** (1952), 380

A Tentative Interpretation of Bickford's Observation of the Resonance Absorption in Magnetite below Its Transition Point .... Takeo Nagamiya **10** (1953), 72

On the Spin-Lattice Relaxation at Extremely Low Temperatures (L) .... K. Sugihara **10** (1953), 234

Theory of Antiferromagnetic Resonance in $CuCl_2 \cdot 2H_2O$ .... Takeo Nagamiya **11** (1954), 309
(*cf.* Errata: Vol. 15, p. 306)

On the Spin Wave Field Theory and Its Application to the Microwave Resonance .... Noboru Tsuya **12** (1954), 1

The Relaxation Process in Ferromagnetic Resonance Absorption (L) .... T. Kasuya **12** (1954), 802

The Relaxation Process in Ferromagnetic Resonance Absorption ——*The Effect of the Conduction Electron*—— (L) .... T. Kasuya **12** (1954), 803

Nuclear Magnetic Relaxation in Antiferromagnetics. I .... Tôru Moriya **16** (1956), 23

Nuclear Magnetic Relaxation in Antiferromagnetics. II .... Tôru Moriya **16** (1956), 641

67 Resonance and Relaxation in Solids and Liquids (*continued*)

Equivalence between the Line Width and the Rate of Energy Relaxation in the Inversion Spectrum of Ammonia (L) .... K. Tomita **17** (1957), 513

Note on the Ferromagnetic Resonance Absorption .... Takehiko Oguchi **17** (1957), 659

Nuclear Magnetic Relaxation in Solid Hydrogen .... Tôru Moriya & Kazuko Motizuki **18** (1957), 183

On the Pressure Shift of the Inversion Frequency of Ammonia (L) .... K. Tomita **18** (1957), 316

On the Line Width in Ferromagnetic Resonance (L) .... S. Takeno **18** (1957), 448

On the Spin-Lattice Relaxation Process in Ferromagnets (L) .... F. Terasaki & I. Mannari **18** (1957), 552

Nuclear Magnetic Relaxation in Liquid Hydrogen .... Tôru Moriya **18** (1957), 567

A General Theory of Magnetic Resonance Saturation .... Kazuhisa Tomita **19** (1958), 541

A Note on the Magnetic Relaxation in a Low Field (L) .... M. Tanaka **20** (1958), 251

Indirect Coupling of Nuclear Spins in Antiferromagnet with Particular Reference to MnF_2 at Very Low Temperatures .... Tuto Nakamura **20** (1958), 542

A General Theory of Magnetic Double Resonance .... Kazuhisa Tomita **20** (1958), 743

68 Mechanical Properties (Elasticity and Plasticity)

Note on the Theory of the Frequency Spectrum of Crystalline Solid .... Tuto Nakamura **5** (1950), 213

On the Theory of the Dielectric, Piesoelectric, and Elastic Properties of $NH_4H_2PO_4$ .... Takeo Nagamiya **7** (1952), 275

On the Determination of the Elastic Spectra of Solids from Specific Heat Data .... Wolfgang Kroll **8** (1952), 457

A Note on the Elastic Frequency Distribution Function of Crystal (L) .... S. Huzinaga **9** (1953), 678

68 Mechanical Proerties (Elasticity and Plasticity) (*continued*)

Theory of Normal Modes of Vibration of Crystal..................
..............................Sadaaki Yanagawa **10** (1953), 83
(*cf.* Errata: Vol. 10, p. 370)

On the Elastic Frequency Distribution Function of Simple Crystals
..............Sigeru Huzinaga & Tasuke Hasino **10** (1953), 279

Chain Configurations and Rubber Elasticity (L)..................
..................................E. Teramoto **11** (1954), 604

On the Vibration of Disordered Linear Lattice. II.................
.................................Jun-ichi Hori **18** (1957), 367

Effects of Defects on Lattice Vibrations——*Thermodynamical Properties*——..
............Kaoru Yamahuzi & Tomoyasu Tanaka **20** (1958), 327

Vibrational Thermodynamic Properties of Lattices with Defects. I ——*The Linear Lattice*——...........................
......J. Mahanty, A. A. Maradudin & G. H. Weiss **20** (1958), 369

71 Statistical Mechanics and Thermodynamics

The Propagation of Order in Crystal Lattices....................
................................Haruo Shimazu **4** (1949), 201

Density Matrix and New Configuration Space (L)................
................................T. Nishiyama **5** (1950), 135

Integral Equations between Distribution Functions of Molecules....
......................................Syu Ono **5** (1950), 822

An Algebraic Theory of the Density Matrix. I.................
............Kodi Husimi & Toshiyuki Nishiyama **5** (1950), 909

An Algebraic Theory of the Density Matrix. II.................
..........................Toshiyuki Nishiyama **6** (1951), 1

Note on Many Fermion Problems....Toshiyuki Nishiyama **6** (1951), 366

Statistical Thermodynamics of Solutions of Electrolytes and Non-Electrolytes..........................Syu Ono **6** (1951) 447

Point of Codensation and the Volume Dependency of the Cluster Integrals......Shigetoshi Katsura & Hisaaki Fujita **6** (1951), 498

On the Zero Point Entropy of Methane Crystals.................
.............................Takeo Nagamiya **6** (1951), 702

71 **Statistical Mechanics and Thermodynamics** (*continued*)

The Quantum Mechanics of Assemblies of Interacting Particles (L) .... T. Matsubara **6** (1951), 899

On the Hydrodynamics of Degenerating Bose-Einstein Gases .... Sadao Nakajima **6** (1951), 980

On the Rate of Irreversible Production of Entropy .... Natsuki Hashitsume **7** (1952), 225

Statistical Mechanics of Cooperative Phenomena .... Tuto Nakamura **7** (1952), 241

The Asymptotic Expression for the Structure Function of Interacting Particles (L) .... H. Matsuda **8** (1952), 136

The Quantum-Statistical Theory of Transport Phenomena. I——*On the Boltzmann-Uehling-Uhlenbeck Equation*—— .... Hazime Mori & Syu Ono **8** (1952), 327

A Statistical Theory of Linear Dissipative Systems .... Natsuki Hashitsume **8** (1952), 461

Variational Principle in Hydrodynamics .... Hirosi Itô **9** (1953), 117

The Statistical Mechanics of Time-Dependent Phenomena (L) .... H. Mori **9** (1953), 470

The Quantum-Statistical Theory of Transport Phenomena. II——*On the Theory of Metallic Conductivity*—— .... Hazime Mori **9** (1953), 473

Statistical Mechanics of General Brownian Motions underlying Irreversible Processes .... Tsunenobu Yamamoto **10** (1953), 11

Statistical Theory of Hindered Rotation in Molecular Crystals. II ——*Quantum Effects*—— .... Tuto Nakamura **10** (1953), 95

The Statistical Quantum Mechanics of Time-Dependent Phenomena and Viscosity (L) .... T. Sasakawa **10** (1953), 116

The Distribution Function of Degenerating Ensemble——*An Addition to "Generalization of Statistics"*——(L) .... T. Okayama **10** (1953), 583

A Method in Quantum Statistical Mechanics. I ——*General Theory*—— .... Hiroshi Ichimura **11** (1954), 374

A Method in Quantum Statistical Mechanics. II——*The Degenerate Fermi-Dirac Assembly*—— .... Hiroshi Ichimura **11** (1954), 385

71 Statistical Mechanics and Thermodynamics *(continued)*

A Method in Quantum Statistical Mechanics. III
——Virial Expansion for the Quantum Gas—— ....
.... Hiroshi Ichimura **11** (1954), 519

Statistical Mechanics of Surface Tension of Curved Interface. I ......
.... Tomio Segawa & Ei Teramoto **11** (1954), 528

The Quantum-Statistical Theory of Transport Phenomena. III
——Coarse-Grained Phase-Space Distribution Functions——
.... Syu Ono **12** (1954), 113

A Hydrodynamical Description of Many Bose Particle Systems .....
.... Toshiyuki Nishiyama **12** (1954), 265

Remarks on Quantum Hydrodynamics .... Hirosi Itô **13** (1955), 543

On the Theory of Thermal Conductivity of Monovalent Metals ....
.... Tadao Kasuya **13** (1955), 561

Quantum-Statistical Mechanics of Electron-Phonon System (L) .....
.... T. Matsubara **13** (1955), 628

A New Approach to Quantum-Statistical Mechanics ....
.... Takeo Matsubara **14** (1955), 351

The Statistical Mechanical Aspect of H-Theorem ....
.... Ei Teramoto & Chieko Suzuki **14** (1955), 411

On Solutions of He^3 and He^4 (L) ....
.... S. K. Trikha & V. S. Nanda **15** (1956), 178

On the Energy Dissipation of Conduction Electrons undergoing Elastic Scattering by Impurities (L) ....
.... T. Yamamoto, K. Tani & K. Okada **15** (1956), 184

A Statistical Theory of Linear Dissipative Systems. II ....
.... Natsuki Hashitsume **15** (1956), 369

The Statistical Mechanical Aspect of the H-Theorem. II ....
.... Ei Teramoto **15** (1956), 480

On the Quantum Mechanics-like Description of the Theories of the Brownian Motion and Quantum Statistical Mechanics ....
.... Nobuhiko Saito & Mikio Namiki **16** (1956), 71
(*cf.* Errata: Vol. 17, p. 522)

On the Grand Canonical Distribution Method of Statistical Mechanics
...... Tsunenobu Yamamoto & Hirotsugu Matsuda **16** (1956), 269

71 **Statistical Mechanics and Thermodynamics** *(continued)*

Integral over Path Formulation of Statistical Theory of Irreversible Processes (L) .... D. Falkoff **16** (1956), 530

A Method of Calculation of Electrical Conductivity .... Huzio Nakano **17** (1957), 145

On the Vibration of Disordered Linear Lattice. I .... Jun-ichi Hori & Takashi Asahi **17** (1957), 523

Cluster Development Method in the Quantum Mechanics of Many Particle System. I .... Fumiaki Iwamoto & Masami Yamada **17** (1957), 543

On Collective and Internal Motions in a Bose System .... Toshiyuki Nishiyama **17** (1957), 711

Remarks on Mayer's Reduced Density Matrix Method .... Yukio Mizuno & Takeo Izuyama **18** (1957), 33

On the Many-Body Pseudopotential for a System of Hard-Spheres (L) .... R. Abe **18** (1957), 324

Ferromagnetism of a Gas of Hard Sphere Fermions with Spin 1/2 (L) .... T. Morita, R. Abe & S. Misawa **18** (1957) 326

Cluster Development Method in the Quantum Mechanics of Many Particle System. II——*Saturation of Nuclear Forces*—— .... Fumiaki Iwamoto & Masami Yamada **18** (1957), 345

Multiple Production of Particles and Hydrodynamical Aspect of Quantum Theory of Fields .. Mikio Namiki & Chikashi Iso **18** (1957), 591

Cluster Expansion of the Ground State of a Bose Particles System (L) .... F. Iwamoto **19** (1958), 595

Cluster Theory of Condensing Systems .... Kazuyoshi Ikeda **19** (1958), 653

Quantum-Mechanical Many-Body Problem with Hard-Sphere Interaction .... Ryuzo Abe **19** (1958), 699

Cluster Sums and Related Coefficients of the Ising Model .... Shigetoshi Katsura **20** (1958), 192

The Magnetic Properties of the Praseodymium and the Neodymium Metals .... Tsuyoshi Murao **20** (1958), 277

71 Statistical Mechanics and Thermodynamics *(continued)*

Effects of Defects on Lattice Vibrations——*Thermodynamical Properties*——..Kaoru Yamahuzi & Tomoyasu Tanaka **20** (1958), 327

Vibrational Thermodynamic Properties of Lattices with Defects. I ——*The Linear Lattice*—— .... J. Mahanty, A. A. Maradudin & G. H. Weiss **20** (1958), 369

Quantum Statistical Mechanics of Electron-Phonon System. II——*Specific Heat and Spin Paramagnetic Susceptibility*—— .... Hiroshi Ichimura **20** (1958), 415

Quasi-Chemical Equilibrium Theory. II .... J. M. Blatt & Takeo Matsubara **20** (1958), 553

Bose-Einstein Lattice Gases equivalent to the Heisenberg Model of Ferro-, Antiferro- and Ferrimagnetism .... Tohru Morita **20** (1958), 614

Equilibrium Properties of Classical Electron Gas in Uniform Positive Ion Distribution .... Yoshi H. Ichikawa **20** (1958), 715

Bose-Einstein Lattice Gas Theory of Ferromagnetism .... Tohru Morita **20** (1958), 728

Theory of Classical Fluids: Hyper-Netted Chain Approximation. I ——*Formulation for a One-Component System*—— .... Tohru Morita **20** (1958), 920

On Quantum Theory of Transport Phenomena ——*Steady Diffusion*—— .... Sadao Nakajima **20** (1958), 948

Relativistic Hydrodynamics of the Dirac Matter .... Takehiko Takabayasi **Sup. 4** (1957), 1

72 Phase Transition

The Phase Transition and the Piezoelectric Effect of KH_2PO_4 .... Shigeo Yomosa & Takeo Nagamiya **4** (1949), 263

A Note on the Eigenvalue Problem in Crystal Statistics .... Yoichiro Nambu **5** (1950), 1

The Statistics of Honeycomb and Triangular Lattice. I .... Kodi Husimi & Itiro Syozi **5** (1950), 177

The Statistics of Honeycomb and Triangular Lattice. II .... Itiro Syozi **5** (1950), 341

72 Phase Transition *(continued)*

A Model for the Condensation Phenomena (L)..................
........................S. Katsura & H. Fujita **5** (1950), 500

Some Remarks on the Condensation Phenomena..................
.... Shigetoshi Katsura & Hisaaki Fujita **5** (1950), 997

On the Theory of Cooperative Phenomena.......Tomoyasu Tanaka,
Hiroshi Katsumori & Soichiro Tôshima **6** (1951), 17

Statistics of Kagomé Lattice................ Itiro Syozi **6** (1951), 306

Point of Condensation and the Volume Dependency of the Cluster
Integrals......Shigetoshi Katsura & Hisaaki Fujita **6** (1951), 498

On the Crystal Statistics of Two-Dimensional Ising Ferromagnets ..
.... Tsunenobu Yamamoto **6** (1951), 533

Statistics of Two-Dimensional Ising Lattices of Chequered Types
(L)................................T. Utiyama **6** (1951), 907

Statistical Mechanics of Phase Transition....... Syu Ono **8** (1952), 1

A Theory of Antiferromagnetism.............................
.... Takehiko Oguchi & Yukio Obata **9** (1953), 359

Antiferromagnetism. The Kagomé Ising Net....................
.... Kenzi Kanô & Shigeo Naya **10** (1953), 158

On the State of Solid Hydrogen (L) ....
.... K. Tomita & I. Mannari **10** (1953), 367

On the Spontaneous Magnetizations of Honeycomb and Kagomé Ising
Lattices.......................... Shigeo Naya **11** (1954), 53

On the Theory of Condensing Systems (L).... K. Ikeda **11** (1954), 336

On the Theory of Cooperative Phenomena.......................
.... Shigetoshi Katsura **11** (1954), 476

The Combinatorial Method and the Two-Dimensional Ising Model ..
........................R. B. Potts & J. C. Ward **13** (1955), 38

Statistical Models of Ferrimagnetism ....
.... Itiro Syozi & Huzio Nakano **13** (1955), 69

A Theory of Antiferromagnetism. II.........................
.... Takehiko Oguchi **13** (1955), 148

Phase Transition of Husimi-Temperley Model of Imperfect Gas ....
.... Shigetoshi Katsura **13** (1955), 571

72 Phase Transition *(continued)*

On the Quenching of Molecular Rotation of Ortho-Hydrogen in Solid State.......................... Tuto Nakamura **14** (1955), 135

On Solutions of He^3 and He^4 (L) ....S. K. Trikha & V. S. Nanda **15** (1956), 178

On the Theory of Condensation........Kazuyoshi Ikeda **16** (1956), 341

Theory of Bose-Einstein Condensation of an Imperfect Bose-Einstein Gas...Takeo Matsubara, Akira Morita & Namio Honda **16** (1956), 447

On the Bose-Einstein Condensation....Shigetoshi Katsura **16** (1956), 589

Ferromagnetism of a Gas of Hard Sphere Fermions with Spin 1/2 (L)..............T. Morita, R. Abe & S. Misawa **18** (1957), 326

Remarks on Spin-Wave Theory for the Ferromagnetic Exchange Problem......................... Isao Mannari **19** (1958), 201

73 Low Temperature Physics

On the Mechano-Caloric Effect in Liquid Helium II ....Sadao Nakajima & Masao Shimizu **5** (1950), 1010

Two Fluid Theory of Liquid Helium II below 1°K ....Sadao Nakajima & Masao Shimizu **6** (1951), 122

A Note on the Pressure Equation of the Two Fluid Model of Helium II.......................Tunemaru Usui **6** (1951), 244

Molecular Theory of Liquid Helium...... Morikazu Toda **6** (1951), 458

On the Liquid He^3 and Its Mixture with He^4 ....Morikazu Toda & Akira Ishihara **6** (1951), 480

The Effect of Helium 3 Ingredient on the Wave Propagation in Liquid Helium II ....Shoichiro Koide & Tunemaru Usui **6** (1951), 506

The Effect of He^3 Ingredient on the Thermal Rayleigh Disc Torque (L).........................S. Koide & T. Usui **6** (1951), 622

Quantum Statistical Theory of Liquid Helium ....Takeo Matsubara **6** (1951), 714

Pressure Effect on the Second Velocity in Liquid Helium II .... Atsushi Kondoh, Sadao Nakajima & Masao Shimizu **6** (1951), 939

On the Hydrodynamics of Degenerating Bose-Einstein Gases .... Sadao Nakajima **6** (1951), 980

73 Low Temperature Physics (*continued*)

The Critical Velocity and Frictions in the Flow of Liquid Helium II (L) .... T. Kasuya **9** (1953), 87

Damped Oscillation in the Surface Film of Liquid Helium II (L) .... T. Kasuya **9** (1953), 89

Gorter's Friction and Saturation of Surface Flow Rate (L) .... T. Kasuya **9** (1953), 90

On the Lattice Vibration and the Effective Mass of Conduction Electrons .... Hideo Kanazawa, Shoichiro Koide & Tamazi Noguchi **9** (1953), 288

On a Correlation between the Electron Assembly and the Lattice Waves in the Crystal .... Yoshiharu Kitano & Huzio Nakano **9** (1953), 370

The Field Theory of Superconductivity ..... Abdus Salam **9** (1953), 550

On the Interaction of Electrons with Lattice Vibrations .... Hideo Kanazawa **10** (1953), 275

On the State of Solid Hydrogen (L) .... K. Tomita & I. Mannari **10** (1953), 367

On the Radiative Interaction of Phonon Field with Electrons (L) .... H. Kanazawa **10** (1953), 471

The Second Virial Coefficient at Very Low Temperatures (L) .... K. Hiroike **10** (1953), 575

On the Bose-Einstein Liquid Model for Liquid Helium. I——*He^3-He^4 Mixtures*—— .... Ziro Mikura **11** (1954), 25

On the Bose-Einstein Liquid Model for Liquid Helium. II——*Properties under High Pressures*—— .... Ziro Mikura **11** (1954), 207

On the Bose-Einstein Liquid Model for Liquid Helium. III——*Further Considerations regarding Vapour Pressures of He^3-He^4 Mixtures*—— .... Ziro Mikura **11** (1954), 244

Further Considerations regarding Liquid Helium II at High Pressures (L) .... Z. Mikura **11** (1954), 503

On the Thermal Rayleigh Disk in Liquid Helium containing He^3 (L) .... Z. Mikura **11** (1954), 504

Vapour Pressures of He^3-He^4 Mixtures .... S. M. Bhagat & P. K. Katti **12** (1954), 380

73 Low Temperature Physics *(continued)*

Generalization of Feynman's Theory of Energy Levels of Liquid Helium ...... Hirotsugu Matsuda **12** (1954), 537

Some Comments on the Specific Heat of Liquid He^3 (L) ...... Z. Mikura **13** (1955), 120

On the Specific Heat of a Solution of He^3 in Liquid He^4 (L) ...... Z. Mikura **13** (1955), 122

Quantum Hydrodynamics for a Charged Non-Viscous Fluid (L) ...... N. Mikoshiba **13** (1955), 627

Quantum-Statistical Mechanics of Electron-Phonon System (L) ...... T. Matsubara **13** (1955), 628

A General Theory of Meissner Effect (L) ...... T. Matsubara **13** (1955), 631

The Character of the Roton State in Liquid Helium (L) ...... R. P. Feynman & M. Cohen **14** (1955), 261

On the Bose-Einstein Liquid Model for Liquid Helium. IV —*A Revised Model*— ...... Ziro Mikura **14** (1955), 337
(*cf.* Errata: Vol. 15, p. 187)

Heat Conductivity and Viscosity of Liquid ^{3}He (L) ...... B. K. Agarwal **14** (1955), 493

On Solutions of He^3 and He^4 (L) ...... S. K. Trikha & V. S. Nanda **15** (1956), 178

On the Energy Dissipation of Conduction Electrons Undergoing Elastic Scattering by Impurities (L) ...... T. Yamamoto, K. Tani & K. Okada **15** (1956), 184

Surface Tension of Liquid He^4 and Liquid He^3 ...... S. K. Trikha & O. P. Rustgi **15** (1956), 296

Thermodynamic Properteis of He^3 (L) ...... V. S. Nanda & S. K. Trikha **16** (1956), 254

A Lattice Model of Liquid Helium (L) ...... T. Matsubara & H. Matsuda **16** (1956), 416

Theory of Bose-Einstein Condensation of an Imperfect Bose-Einstein Gas ...... Takeo Matsubara, Akira Morita & Namio Honda **16** (1956), 447

73 **Low Temperature Physics** (*continued*)

A Lattice Model of Liquid Helium. I .... Takeo Matsubara & Hirotsugu Matsuda **16** (1956), 569

On the Bose-Einstein Condensation.... Shigetoshi Katsura **16** (1956), 589

A Lattice Model of Liquid Helium. II .... Hirotsugu Matsuda & Takeo Matsubara **17** (1957), 19

On the Effective Normal Fluid Density of Solution of He^3 in He^4 (L)................. S. K. Trikha & V. S. Nanda **17** (1957), 126

The Surface Tension of Liquid He^3 (L) .... S. K. Trikha & O. P. Rustgi **17** (1957), 303

Theory of the Susceptibility and Specific Heat of He^3............. .... Sigeo Yomosa **17** (1957), 487

Viscosity and Heat Conductivity of Liquid He^3 (L) ....S. K. Trikha **17** (1957), 609

On Solutions of He^3 and He^4..S. K. Trikha & V. S. Nanda **17** (1957), 679

Theory of Liquid He^3....................S. K. Trikha **18** (1957), 1

A Lattice Model of Liquid Helium. III——*Equilibrium Properties of Liquid He^4 and Mixtures of He^4 and He^3*—— .... Hirotsugu Matsuda **18** (1957), 357

On the Lattice Model of Liquid Helium proposed by Matsubara and Matsuda......................... Tohru Morita **18** (1957), 462

A Comment on Bardeen's Theory of Superconductivity (L)........ ....S. Nakajima & T. Kasuya **18** (1957), 662

(*cf.* Errata: Vol. 20, p. 783)

On the Form Factor of Liquid He^4 at Absolute Zero. I .... Ryuzo Abe **19** (1958), 57

Density of the Normal Component for Solutions of He^3 and He^4 (L).......................... S. K. Trikha **19** (1958), 346

Ground State Energy of Bose System with Lennard-Jones Potential (L)...................................R. Abe **19** (1958), 350

On the Form Factor of Liquid He^4 at Absolute Zero. II.......... .... Ryuzo Abe **19** (1958), 407

Exact Treatment of Bardeen's Theory of Superconductivity in the Strong Coupling Limit (L) .... Y. Wada, F. Takano & N. Fukuda **19** (1958), 597

73 Low Temperature Physics *(continued)*

Long-Range Spin Interaction and the Meissner-Ochsenfeld Effect . . . . Robert MacCredie May & Max Robert Schafroth **19** (1958), 646

Quantum Mechanics of Strongly Interacting Particles with an Application to Lennard-Jones Potential . . Ryuzo Abe **19** (1958), 713

Quantum Statistical Mechanics of Electron-Phonon System. II
——*Specific Heat and Spin Paramagnetic Susceptibility*——
. . . . Hiroshi Ichimura **20** (1958), 415

The Meissner-Ochsenfeld Effect in the Bogoliubov Theory (L) . . . . J. M. Blatt & T. Matsubara **20** (1958), 781

Ground State Energy of Bose Particle System . . . . Ryuzo Abe **20** (1958), 785

Superconductivity of Ferromagnetic Metals (L) . . . . T. Kasuya **20** (1958), 980

81 Miscellaneous

On the Similarity between Chemical and Nuclear Reactions. I (A)
. . . . E. Kanai **3** (1948), 214

On the Thermal Reactions in Gas Phase. I. . . . Eizô Kanai **4** (1949), 11

On the Thermal Reactions in Gas Phase. II . . Eizô Kanai **4** (1949), 171

On the Theory of Chemically Reacting Gas . . . . Kazuo Takayanagi **6** (1951), 486

Generalization of Statistics . . . . Taisuke Okayama **7** (1952), 517

Čerenkov Radiation and Supersonic Flows . . . . Tosiya Taniuti **10** (1953), 525

The Artificial Satellite and the Relativistic Red Shift (L) . . . . A. Das **18** (1957), 554

Many-Body Pseudopotential for Hard-Sphere Interaction . . . . Ryuzo Abe **19** (1958), 1

Notes on the Magnetic Mirror Effect . . . . Masatomo Sato **20** (1958), 737

AUTHOR INDEX

Vols. 1 *thru* 20

Sup. Nos. 1 thru 8

A 233

B 235

C 235

D 235

E 235

F 236

G 239

H 240

I 245

K 249

L 256

M 256

N 262

O 267

P 271

R 271

S 271

T 276

U 282

V 284

W 284

Y 285

AUTHOR INDEX

Abe-R. On the Many-Body Pseudopotential for a System of Hard-Spheres.................................. **18** (1957), 324 (L)
—— (see Morita-T.) ..**18** (1957), 326 (L)
—— Many-Body Pseudopotential for Hard-Sphere Interaction **19** (1958), 1
—— On the Form Factor of Liquid He^4 at Absolute Zero. I, II.... **19** (1958), 57 407
—— Ground State Energy of Bose System with Lennard-Jones Potential............................... **19** (1958), 350 (L)
—— Quantum-Mechanical Many-Body Problem with Hard-Sphere Interaction............................ **19** (1958), 699
—— Quantum Mechanics of Strongly Interacting Particles with an Application to Lennard-Jones Potential ..**19** (1958), 713
—— Ground State Energy of Bose Particle System **20** (1958), 785
Abe-S. (see Takeno-H.)........ **6** (1951), 837
Agarwal-B. K. Heat Conductivity and Viscosity of Liquid ^{3}He......**14** (1955), 493 (L)
Ahrens-T. Nuclear Matrix Element Relations in the Fermi Theory of Beta Decay **18** (1957), 331
Aidzu-K., Fujimoto-Y., Fukuda-H., Hayakawa-S., Takayanagi-K., Takeda-G. & Yamaguchi-Y. On the Negetive π-Meson Capture ...**5** (1950), 931
——, **Fujimoto-Y.** & **Fukuda-H.** On the Production of Meson by X-Rays...... .... **6** (1951), 193
—— & **Kinoshita-T.** On a Possible Model of the V-Particle ..**6** (1951), 630 (L)
Akiba-T. & **Sawada-K.** On the Effective Hamiltonian for Pseudoscalar Meson with Pseudoscalar Coupling with Nucleon...... .... **12** (1954), 94
—— (see Nakabayasi-K.) .... **12** (1954), 250 (L)
—— (see Hasegawa-K.)............... .... **12** (1954), 548 (L)
—— & **Sato-I.** The Dispersion Relations for the Scattering of Photons from Proton **19** (1958), 93
Amai-S., Fukuda-H., Iso-C. & **Sato-M.** Hydrodynamical Treatment of Multiple Meson Production in High Energy Nucleon-Nucleus Collisions............**17** (1957), 241
——, **Murota-T.** & **Nishida-M.** A Remark on High Energy Phenomena **17** (1957), 807
—— (see Nagata-Sinobu)...**19** (1958), 495
Ando-F. & **Miyazawa-H.** Electron-Neutron Interaction ....**17** (1957), 607 (L)
Aono-S. Charge-Transfer Forces in Molecular Compounds **20** (1958), 133
Apte-A. S. (see Majumdar-R. C.).......... .... **6** (1951), 737
Araki-G. Magnetic Moment and Virtual Dissociation of Nuclear Particle.......... .... **1** (1946), 1
—— Quantum Mechanics of Circularly Polarized Photons. I ——*General Theory*——.......................... **1** (1946), 125
—— Quantum Mechanics of Circularly Polarized Photons. II ——*Application to the Normal Zeeman Effect*—— **2** (1947), 1
—— On the Modification of the Hamiltonian of a Nuclear Particle due to Its Virtual Dissociation...... **2** (1947), 89 (L)
—— Quantum Mechanics of Circularly Polarized Photons........ **2** (1947), 96 (A)
—— On the Energy-Momentum Tensor .... **2** (1947), 97 (A)
—— Singularity at the Origin of the Schrödinger Eigenfunction in the Coulomb Field...................... **3** (1948), 97 (L)
—— Interval Formula for Multiplets of Atomic Energy Levels. I, II............. ....**3** (1948), 152, 252
—— On the Theory of Elliptically Polarized Photons.............**3** (1948), 214 (A)
—— Divergence Difficulty and Mixed Meson Theory. I, II **3** (1948), 422; **4** (1949), 34
—— On the Hermitian Condition .... **3** (1948), 445 (L)
—— On the Expectation Value........ .... **3** (1948), 448 (L)
—— On the Meson Theory of Nuclear Forces **4** (1949), 193

Araki-G. (*continued*)

On the Eigenvalue Problem of Hydrogen .... **4** (1949), 366 (L

Domain of Kinetic Energy and Perturbation Theory......**4** (1949), 379 (L)

& **Mori-Y.** Ground State of Deuteron according to Pseudoscalar Meson Theory .... **5** (1950), 505 (L

Production of Scalar and Pseudoscalar Mesons by Photons ....**5** (1950), 507 (L)

, **Tutihasi-S.** & **Watari-W.** Electronic States of C_2-Molecule. I ——*Interaction between P-Electrons*—— .... (*cf.* Errata: Vol. 6, p. 446).....**6** (1951), 135

—— & **Mori-Y.** Pseudoscalar Meson Theory and Ground State of Deuteron.. .... **6** (1951) 188

Effect of Nucleon Recoil on Nuclear Forces...................**6** (1951), 379

& **Tutihasi-S.** On the Intervals of Na ^{2}D and Cu ^{2}F..........**6** (1951) 430 (L)

& **Huzinaga-S.** Recoil Effect on Electron-Proton Forces and Inapplicability of Energy Law **6** (1951), 673

& **Watari-W.** Electronic States of C_2-Molecule. II —— *Effect of 2s-Shells*—— **6** (1951), 945

& **Watari-W.** Electronic States of C_2-Molecule. III —— *Numerical Values and Reduction Formulas of Integrals*—— **6** (1951), 961

——— (see Murai-T.)......... **8** (1952), 615

& **Murai-T.** Molecular Structure and Absorption Spectra of Carotenoids.. (*cf.* Errata: Vol. 10, p. 700)....**8** (1952), 639

& **Araki-H.** Interaction between Electrons in One-Dimensional Free-Electron Model with Application to Absorption Spectra of Cyanine Dyes.......... .... **11** (1954), 20

Spin-Orbit Coupling in the Pseudoscalar Meson Theory of Nuclear Forces..........................**13** (1955), 13

& **Huzinaga-S.** Absorption Spectra of Unsymmetrical Cyanines **15** (1956), 307

Partial Description of Quantum-Mechanical System **16** (1956), 197

——— Free-Electron Model of Benzene.. ....**16** (1956), 212

Free-Electron Ring Model of Polyacenes.....................**16** (1956), 265

(see Tomonaga-S.).............. ....Sup. **1** (1955), 82

Araki-H. (see Araki-G.) **11** (1954), 20

———, **Munakata-Y.**, **Kawaguchi-M.** & **Goto-T.** Quantum Field Theory of Unstable Particles (*cf.* Errata: Vol. 18, p. 101) **17** (1957), 419

——— Quantum-Electrodynamical Corrections to Energy-Levels of Helium **17** (1957), 619

Aramaki-S. On the Cut-off Theory in Quantum Field Theory..**18** (1957), 320 (L)

Arima-A., **Horie-H.** & **Tanabe-Y.** Generalized Racah Coefficient and Its Applications................ **11** (1954), 143

— & **Horie-H.** Configuration Mixing and Magnetic Moments of Nuclei........ ....**11** (1954), 509 (L)

— & **Horie-H.** Configuration Mixing and Magnetic Moments of Odd-Nuclei.. (*cf.* Errata: Vol. 13, p. 127).. **12** (1954), 623

, **Horie-H.** & **Sano-M.** The *l*-Forbidden Magnetic Dipole Transitions.... ....**17** (1957), 567

——— Nuclear Binding Energies and Low Lying Energy Levels in the $2s_{1/2}$ and $1d_{3/2}$ Shells..............**19** (1958), 421

—— — (see Noya-H.)...... Sup. **8** (1958), 33

Ariyama-K. & **Mase-S.** Electronic Structure of Graphite and Boron Nitride...... ....**12** (1954), 244 (L)

—— & **Mase-S.** An Interpretation for the Electronic Conductivity and Diamagnetic Susceptibility of Graphite ....**12** (1954), 246 (L)

Asahi-T. (see Hori-J.) **17** (1957), 523

Ashkin-J., **Simon-A.** & **Marshak-R.E.** On the Scattering of π-Mesons by Nucleons **5** (1950), 634

Ataka-Y. On the Nuclear Potential in the Meson Theory............**6** (1951), 256 (L)

——— On the Exchange Current........ ....**6** (1951), 627 (L)

Auluck-F. C. & **Kothari-D. S.** Fermi's Theory of the Generation of Pions and the Partition Theory of Numbers...... ....**11** (1954), 120 (L)

(see Kothari-D. S.)............. ....**13** (1954), 100 (L)

Azuma-S. (see Hasegawa-K.) .... **10** (1953), 240 (L); **12** (1954), 546 (L); **13** (1955), 360

Baba-K. & Kanesawa-S. Reaction of Radiation Field on Meson......**3** (1948), 443 (L)

& **Ito-D.** Reaction of Meson Field on Nucleon................**4** (1949), 95 (L)

———, **Ito-D., Miyazima-T. & Sasaki-M.** On the Concept of the Nuclear Potential (*cf.* Errata: Vol. 5, p. 339)..**5** (1950), 159(L)

Note on the Physical Connection between Electron's Electromagnetic Mass and Its Charge............**7** (1952), 328 (L)

Baijal-J. S. & Singh-K. K. The Energy-Levels and Transition Probabilities for a Bounded Linear Harmonic Oscillator.... ....**14** (1955), 214

Baliga-B. B. (see Ghoshal-S. N.)........ ....**17** (1957), 556

Belinfante-F. J. Supermultatempa Teorio por Mezonaj Kampoj......**3** (1948), 460 (L)

Pri la Kalkulado de Elektromagnetaj Fenomenoj per Kampo de Neŭtraj Vektor-Mezonoj kun Neglektebla Maso.. ....**4** (1949), 165

"Integro-Kaŭzeco" Konverĝa en Kvantumteorio de Kampoj.....**6** (1951), 202

Bhagat-S. M. & Katti-P. K. Vapour Pressures of He^3-He^4 Mixtures....**12** (1954), 380

Bhatia-A. B. & Shah-S. M. Saturation of Nuclear Forces..........Neutron Proton Scattering...................**17** (1957), 561

Bhatia-A. K. & Sucher-J. On the Radiative Corrections to the Scattering of Mesons in an External Electromagnetic Field....................**20** (1958), 397 (L)

Bhattacharya-S. The General Theory of Relativity and the Expanding Universe.. ....**11** (1954), 613 (L)

Biswas-S. N. (see Green-H. S.) **18** (1957), 121

General Solution of the Bethe-Salpeter Equation in Instantaneous Interaction Approximation..........**19** (1958), 725

Blatt-J. M. & Matsubara-T. Quasi-Chemical Equilibrium Theory. II............. ....**20** (1958), 553

——— & **Matsubara-T.** The Meissner-Ochsenfeld Effect in the Bogoliubov Theory ....**20** (1958), 781 (L)

Bleuler-K. & Heitler-W. The Reversal of Time and the Quantization of the Longitudinal Field in Quantum Electrodynamics.......................**5** (1950), 900

Bloch-C. On Some Developments in Non-Local Field Theory............**5** (1950), 606

Bohm-D. Comments on an Article of Takabayasi concerning the Formulation of Quantum Mechanics with Classical Pictures......................**9** (1953), 273

Cap-F. Nonlinear Pseudoscalar Meson Theory..................**10** (1953), 235 (L)

Derivation of the Value of the Coupling Constant *g* from the Rest Energy of the Nucleon...............**13** (1955) 62

Chang-C. H. Velocity-Dependent Potential and Gauge Invariance of the First Kind (*cf.* Errata: Vol. 13, p. 340)........ ....**12** (1954), 696 (L)

Chiba-S. Renormalization in the Covariant Treatment of Pion-Nucleon Scattering......**11** (1954), 494 (L); **12** (1954), 481

——— & **Namiki-M.** Zero-Energy Mesonic Processes and Renormalization in D. T. G. 's Formalism....**12** (1954) 693 (L)

——— (see Namiki-M.)..**12** (1954), 694 (L)

———, **Yamazaki-M.** & **Fukuda-N.** Pion-Nucleon Scattering in Tamm-Dancoff Approximation.............**12** (1954), 767

——— (see Hanawa-S.)......**14** (1955), 551

Cohen-M. (see Feynman-R. P.) ....**14** (1955), 261 (L)

Das-A. Effects of the Central Spin on Planetary Motion...........**17** (1957), 373

——— The Artificial Satellite and the Relativistic Red Shift....**18** (1958), 554 (L)

Dodo-T. (see Utiyama-R.) **6** (1951), 587

——— & **Utiyama-R.** On the Equivalence Principle...........**7** (1952), 589 (L)

Donovan-B., Kanazawa-H. & March-N. H. Effect of Long-Range Correlations on Free Electron Diamagnetism........... ....**17** (1957), 813 (L)

Drell-S. D. & Rose-M. E. Zero-Zero Transitions................**7** (1952), 125 (L)

Eastman-P. C. (see Sodha-M. S.)........ ....**19** (1958), 344 (L)

Eguchi-T. (see Knipp-J. K.)....**10** (1953), 24

Eguchi-T. *(continued)*

——— & **Nagata-S.** Isotopic Spin Selection Rule in Σ-Decays........**20** (1958), 144

Enatsu-H. Note on Tanikawa's Theory of Damping ....**3** (1948), 96 (L)

——— & **Noma-S.** On the Meson Pair Theory of Nuclear Physics. III..................................**3** (1948), 215 (A)

——— & **Takano-Y.** On the Photo-Disintegration of the Deuteron —*Pseudoscalar Meson Thoeory*— .... **4** (1949), 375 (L), 543

——— On the Nuclear Forces.....................**4** (1949), 572 (L); **5** (1950), 102

——— On the Interaction of Mesons and Nucleons.....................**5** (1950), 883

——— & **Pac-P. Y.** On the Mass of Cohesive Meson and the Mass Difference of Nucleons. I, II..**6** (1951), 251 (L); 435 (L)

——— On the Self-Energies of Nucleons. I, II ....**6** (1951), 434 (L), 643

——— & **Pac-P. Y.** On the Mass Difference of Nucleons and the Cohesive Mesons.........................**6** (1951), 655

——— (see Yamazaki-K.) **6** (1951), 731

——— Mass Spectrum of Elementary Particles. I —*Eigenvalue Problem in Space-Time*—.............**11** (1954), 125

——— Mass Spectrum of Elementary Particles. II.................**12** (1954), 363

Endo-S., Kinoshita-T. & Koba-Z. Reactive Corrections for the Elastic Scattering of an Electron........ **3** (1948), 320 (L); **4** (1949), 100 (L, *Errata for* Vol. 3, p. 320), 218

——— & **Tani-S.** Nonsingular Tensor Force in Pseudoscalar Meson Theory..............................**5** (1950), 310 (L)

——— & **Kanazawa-H.** Note on the "Champ Soustractif" of Louis de Broglie ....**6** (1951), 436 (L)

——— & **Kanazawa-H.** Note on the Saturation Properties of Nuclear Forces ....**8** (1952), 252 (L)

Enomoto-S., Fujimoto-Y., Horie-S & Tsuzuki-Y. Disintegration of Light Nuclei by σ-Meson Capture.............. (*cf.* Errata: Vol. 7, p. 603)....**7** (1952), 353

Epstein-S. T. Note on Some Calculations in Quantum Field Theory ....**6** (1951), 441 (L)

Ezawa-H. (see Mito-I.)......**18** (1957), 437

Falkoff-D. Integral over Path Formulation of Statistical Theory of Irreversible Processes................**16** (1956), 530 (L)

Fermi-E. High Energy Nuclear Events.. .... **5** (1950), 570

Ferrari-F. & **Villi-C.** A Note on the Generalized Statistics ......**11** (1954), 328 (L)

Feynman-R. P. & **Cohen-M.** The Character of the Roton State in Liquid Helium .... **14** (1955), 261 (L)

Frautschi-S. C. Some Feasible Tests of Quantum Electrodynamics at Small Distances.................Sup. **8** (1958), 21

Fujii-K. & **Iwata-K.** The Utility of the "Individual Γ_5 Transformation" .... **18** (1957), 666 (L)

——— & **Iwata-K.** The Phenomenological Model on the Interaction of Elementary Particels, I, II **19** (1958), 475; **20** (1958), 126

——— & **Iwata-K.** The Spirality of the Decay Product ....**19** (1958), 589 (L)

Fujii-S., Iwadare-J., Otsuki-S., Taketani-M., Tani-S. & **Watari-W.** Note on the Meson Theory of Nuclear Force ....**10** (1953), 478 (L)

———, **Iwadare-J., Otsuki-S., Taketani-M., Tani-S.** & **Watari-W.** The Meson Theory of Nuclear Forces. II —*High Energy Nucleon-Nucleon Scattering*—................ **11** (1954), 11

——— (see Otsuki-S.)........**12** (1954), 521

——— & **Takagi-S.** On the Nuclear Photo-Reaction. I, II ....**14** (1955), 402 (L), 405 (L)

Fujii-Y. (see Hara-O.) .... **16** (1956), 149 (L); **16,** 150 (L); **17,** (1957), 313; **17,** 819 (L); **17,** 820 (L); **17,** 822 (L); **19** (1958), 129; **20** (1958), 89

Fujimoto-Y. & **Yamaguchi-Y.** On the Proton-Decay in Cosmic-Ray Stars...... ....**3** (1948), 462 (L)

——— & **Yamaguchi-Y.** Interpretation of Bursts in Thin-Walled Chambers ....**4** (1949), 101 (L)

——— & **Yamaguchi-Y.** On the Nucleon Component in Cosmic Rays ....**4** (1949), 230 (L)

———, **Hayakawa-S.** & **Yamaguchi-Y.** Cosmic-Ray Bursts under Thick Shields ....**4** (1949), 233 (L)

Fujimoto-Y. (*continued*)

———, **Hayakawa-S.** & **Yamaguchi-Y.** On the Electronic Component in Extensive Air Showers........**4** (1949), 381 (L)

———& **Yamaguchi-Y.** On the Nuclear Stars (*cf.* Addendum: Vol. 4, p. 569).. **4** (1949), 468

——— & **Hayakawa-S.** On the Nature of Cosmic-Ray Bursts........**4** (1949), 502

———, **Hayakawa-S.** & **Yamaguchi-Y.** Directional Distribution of Extensive Air Showers..................**4** (1949), 571 (L)

———, **Hayakawa-S.** & **Yamaguchi-Y.** Remarks on the Nuclear Disintegration by Meson Capture.......................**4** (1949), 575 (L); Sup. **1** (1955), 231

———, **Hayakawa-S.** & **Yamaguchi-Y.** Nuclear Disintegration by π-Meson Capture.....................**4** (1949), 576 (L)

———, **Hayakawa-S.** & **Yamaguchi-Y.** Neutron Component in Extensive Air Showers..................**4** (1949), 579 (L)

——— & **Hayakawa-S.** High Energy Electronic Component in Extensive Air Showers..................**4** (1949), 579 (L)

——— & **Yamaguchi-Y.** Note on Very Large Cosmic-Ray Stars........**5** (1950), 76

——— & **Yamaguchi-Y.** The Range and the Mean Free Path of High Energy Nucleons in Nuclear Matter..**5** (1950), 141 (L)

——— & **Hayakawa-S.** On the Origin of Electronic Rays with Moderate High Energy..................**5** (1950), 144 (L)

———, **Hayakawa-S.** & **Yamaguchi-Y.** The Electronic Component in Extensive Air Showers..................**5** (1950), 196

——— & **Hayakawa-S.** A Picture for Cosmic-Ray Stars........**5** (1950), 315 (L)

——— Diffusion of the Nucleon Component.....................**5** (1950), 316 (L)

———, **Hayakawa-S.** & **Yamaguchi-Y.** Nucleon-Nucleon Interaction at High Energies..................**5** (1950), 318 (L)

———, **Takayanagi-K.** & **Yamaguchi-Y.** The Fast Protons in π-Meson Stars.............................**5** (1950), 498 (L)

———, **Fukuda-H.**, **Hayakawa-S.** & **Yamaguchi-Y.** On the Production of Cosmic Ray Mesons..........**5** (1950), 669

——— & **Yamaguchi-Y.** High Energy Nuclear Evaporation..........**5** (1950), 787

———, **Nishijima-K.**, **Okabayashi-T.**, **Takayanagi-K.** & **Yamaguchi-Y.** Effect of Nuclear Binding on Meson Production..................**5** (1950), 870

——— (see Aidzu-K.) **5** (1950), 931; **6** (1951), 193

——— & **Miyazawa-H.** Photo-Meson Production and Nucleon Isobar................................ **5** (1950), 1052 (L)

——— & **Hayakawa-S.** Nuclear Disintegration caused by Cosmic-Rays.............................. **6** (1951), 96

——— & **Yamaugchi-Y.** Mesonic Processes in Two-Nucleon System.............................. **6** (1951), 166

——— (see Fukuda-H.)........**6** (1951), 788

——— & **Tamura-T.** A Note on the Fermi's Theory of Meson Production................................**6** (1951), 901 (L)

——— (see Enomoto-S.)...... **7** (1952), 353

——— & **Tamura-T.** Slow Neutrons in the Cosmic Radiation. I........**8** (1952), 221

———, **Hayakawa-S.** & **Nishijima-K.** Theory of Rearrangement Collisions.... .... **10** (1953), 113 (L)

——— & **Yamaguchi-Y.** A Test of Charge Independence by the Nuclear Reactions.................. **10** (1953) 476 (L)

———, **Kikuchi-K.** & **Yoshida-S.** Reduced Widths from (d, p) Reactions.... .... **11** (1954), 264

———, **Fukuzawa-F.** & **Okai-S.** Some Remarks on the Nuclear Level Spacing.. .... **16** (1956), 246 (L)

———, **Hayakawa-S.** & **Yamaguchi-Y.** Nuclear Disintegration by π-Meson Capture.....................Sup. **1** (1955), 232

Fujimura-J. (see Nagahara-Y.)......... .... **8** (1952), 49

——— (see Takasu-M.)....**9** (1953), 92 (L)

——— Some Remarks on the Photodisintegration of Deuteron. II..**9** (1953), 132

Fujino-H. & **Osada-J.** Investigation of the Chew-Low Equation by Iteration.... .... **17** (1957), 751

——— (see Osada-J.) **20** (1958), 487

Fujita-H. (see Katsura-S.)............. ....**5** (1950), 500 (L); **5**, 997; **6** (1951), 498

Fujita-J. & **Yamada-M.** Upper Bound of the Pseudoscalar Coupling Constant in Beta-Decay **10** (1953), 518

—— (see Morita-M.)...... **10** (1953), 630

——, **Morita-M.** & **Yamada-M.** β-γ Angular Correlation of Tm^{170}....**11** (1954), 219

—— Nuclear Matrix Element for β-Decay and Ratio of Coupling Constants.. .... **13** (1955), 260

—— On Quantum-Mechanical Nuclear Dipole Vibrations ....**14** (1955), 400 (L); **16** (1956), 112

—— & **Miyazawa-H.** Pion Theory of Three-Body Forces **17** (1957), 360

—— & **Miyazawa-H.** Spin-Orbit Coupling in Heavy Nuclei........**17** (1957), 366

——, **Yamada-M.**, **Matumoto-Z.** & **Nakamura-S.** Parity Nonconservation and the Beta-Spectrum of RaE......... ....**20** (1958), 287

——, **Matumoto-Z.**, **Kuroboshi-E.** & **Miyazawa-H.** Mesic Correction to the Beta-Decay in a Nucleus.... **20** (1958), 308

Fujiwara-I. Operator Calculus of Quantized Operator.................... **7** (1952), 433

—— On the Evaluation of the Operator Function Log(e^y e^z) ..... **9** (1953), 676 (L)

—— On the Duffin-Kemmer Algebra.. ....**10** (1953), 589

—— On the Wave Equation for Spin 1 in Hamiltonian Form....**14** (1955), 166 (L)

—— (see Tsuneto-T.) **14** (1955), 267; **20** (1958), 439

Fukuchi-M. The Energy Band Structure of the Metallic Copper——*The Orthogonalized Plane Wave Method*——........ ....**16** (1956), 222

Fukuda-H., **Miyamoto-Y.** & **Tomonaga-S.** A Self-Consistent Subtraction Method in the Quantum Field Theory. II_1, II_2.. .... **4** (1949), 47, 121

—— & **Miyamoto-Y.** On the γ-Decay of Neutral Meson ....**4** (1949), 235 (L), 347

——, **Miyamoto-Y.**, **Miyazima-T.** & **Tomonaga-S.** Application of Pauli's Regulator to the γ-Decay of Neutrettos.... ....**4** (1949), 385 (L)

——, **Hayakawa-S.** & **Miyamoto-Y.** On the Nature of τ-Meson............ ....**4** (1949), 388 (L)

—— & **Miyamoto-Y.** Selection Rule for the Meson Problem....**4** (1949), 389 (L)

—— & **Miyamoto-Y.** On the Electron-Positron Pair Disintegration of the Neutral Meson............**4** (1949), 391 (L)

—— & **Miyamoto-Y.** The Three Quanta Disintegration of the Neutral Meson...................... **4** (1949), 392 (L)

——, **Miyamoto-Y.**, **Miyazima-T.**, **Tomonaga-S.**, **Oneda-S.**, **Ozaki-S.** & **Sasaki-S.** Applicability of Pauli's Regulator to the γ-Decay of Neutrettos...... .... **4** (1949), 477

—— & **Miyamoto-Y.** The Decay of a $\tau^{\pm}$ Meson into $\pi^{\pm}$ and π_0 Mesons........ ....**5** (1950), 147 (L)

—— & **Miyamoto-Y.** The Decay of a $\tau^{\pm}$ Meson into a $\pi^{\pm}$ Meson and a Photon ....**5** (1950), 148 (L)

——, **Hayakawa-S.** & **Miyamoto-Y.** On the Nature of τ-Mesons. I, II...... ....**5** (1950), 283, 352

—— (see Fujimoto-Y.)......**5** (1950), 669

—— (see Nakamura-S.)......**5** (1950), 740

—— & **Takeda-G.** Production of π-Mesons in Nucleon-Nucleon Collisions near the Threshold Energy........ **5** (1950), 800

—— (see Aidzu-K.) **5** (1950), 931; **6** (1951), 193

—— & **Takeda-G.** The Multiple Production of Mesons by High Energy Nucleon-Nucleon Collisions **5** (1950), 957

—— & **Hayakawa-S.** On the Decay of a Heavy Dirac Meson......**5** (1950), 993

—— & **Kinoshita-T.** Ambiguities in Quantized Field Theories **5** (1950), 1024

——, **Fujimoto-Y.** & **Koshiba-M.** Nuclear Interaction of μ-Meson..**6** (1951), 788

—— (see Amai-S.) **17** (1957), 241

—— (see Nakamura-S.) .... Sup. **1.** (1955), 244

Fukuda-N. (see Miyazima-T.)........... ....**5** (1950), 152 (L)

—— & **Miyazima-T.** The Covariant Theory of Radiation Damping. I ——*General Formalism*——...**5** (1950), 849

——, **Kobayashi-T.**, **Maki-Z.** & **Sato-M.** Comparison of Born and Heitler Expansions in a Scattering Problem ....**8** (1952), 261 (L)

Fukuda-N. *(continued)*

———, **Goto-S., Okubo-S. & Sawada-K.** Theoretical Analysis of Pion-Nucleon Scattering.................... **12** (1954), 79

———, **Sawada-K. & Taketani-M.** On the Construction of Potential in Field Theory...................... **12** (1954), 156

——— (see Chiba-S.) **12** (1954), 767

——— & **Otake-S.** On the Multiple Scattering of an Electron in Lattice .... **13** (1955), 110 (L)

——— (see Yamanouchi-Taiji) **13** (1955), 200

——— Some Relations between the Bound State Problem and Scattering Theory.... .... **15** (1956), 414 (L)

——— (see Wada-Y.)........ **19** (1958), 597

Fukui-K. (see Tomita-K.)............... .... **10** (1953), 362 (L)

Fukui-S., Kitamura-T. & Watase-Y. The Non-Indication of the "Anomalous" Scattering of Mu-Mesons.... **19** (1958), 348 (L)

Fukutome-H. Low's Scattering Equation and S-Matrix............... **17** (1957), 383

Fukuzawa-F. (see Fujimodo-Y.)........ .... **16** (1956), 246 (L)

Furui-S. (see Kanazawa-A.)..**20** (1958), 149

——— (see Sakuma-T.)......**20** (1958), 835

Furuichi-S., Kodama-T., Sugahara-Y., Yonezawa-M. & Wakasa-A. The Decay Interaction of $K_{\mu3}$ and K_{e3} and Fermi Interaction........ **16** (1956), 64 (L)

———, **Kodama-T., Ogawa-S., Sugahara-Y., Wakasa-A. & Yonezawa-M.** On the Spins and Decay Interactions of $K_{\mu3}$ and K_{e3} (*cf.* Errata: Vol. 17, p. 618) **17** (1957), 89

Galasiewicz-Z. Intercation with the Sound Quanta in a System consisting of Two Kinds of Charged Particles—*The Method of Supplementary Variables*— .... **17** (1957), 613 (L)

Gatto-R. Invariants in $K_{\mu3}$ and K_{e3} Decays **19** (1958), 146

Ghosh-N.N. On the Solution of Γ's for a Type of Non-Symmetric Tensor Field $g_{\mu\nu}$...................... **13** (1955), 587

——— On a Solution of Field Equations in Einstein's Unified Field Theory. I, II **16** (1956), 421; **17** (1957), 131

Ghoshal-S. N. & Baliga-B. B. On the Elastic Scattering of Charged Particles by Nuclei in the Intermediate Energy Region..................... **17** (1957), 556

Glauber-R. J. On the Gauge Invariance of the Neutral Vector Meson Theory...... .... **9** (1953), 295

——— Note on the Neutral Vector Meson Theory.......... **10** (1953), 690 (L)

Goodman-C. Nuclear Structure as revealed by Elastic Excitation...... **14** (1955), 95

Goto-H. Some Remarks on the Mass Spectrum and Non-Local Interaction........ .... **10** (1953), 698 (L)

Gotô-K. Spinors in Five Dimensions.... ....**5** (1950), 42

——— On the So-called Pseudo-Spinors.. .... **6** (1951), 990

——— Wave Equations in de Sitter Space ....**6** (1951), 1013 (L)

——— Principle of Detailed Balance in Quantum Field Theory (*cf.* Errata: Vol. 9, p. 326)....................**8** (1952), 565 (L)

——— On the Meson Wave Equation in de Sitter Space (*cf.* Errata: Vol. 9, p. 326) ....**8** (1952), 672 (L)

——— Wave Equations with New Degree of Freedom..................**12** (1954), 208

——— Wave Fields in de Sitter Space......... ....**12** (1954), 311

——— Relativistic Wave Equations under the Inhomogeneous Lorentz Group...... ....**12** (1954), 409

——— On Products of Quantities as Distributions........... **13** (1955), 112 (L)

——— On a Regular Formulation of Quantum Field Theory. I—*Non Relativistic Theory*— **15** (1956), 167

——— A Covariant Interpretation of the Existence of the Parity Non-Conservation and the New Freedoms for Elementary Particles...........**19** (1958), 592 (L)

——— Relativistic Magnetohydrodynamics....................... **20** (1958), 1

Goto-Shigeo, Kanai-E. & Kobayasi-M. On the β-Spectra of the Cu^{64} (*cf.* Errata: Vol. 4, p. 102)...........**3** (1948), 449 (L)

——— Note on the Non-Relativistic Limit of the Compton Scattering ....**7** (1952), 585 (L)

Goto-Shigeo *(continued)* Meson Nucleon Scattering... **9** (1953), 91 (L)

——— (see Takasu-M.).. **9** ((1953), 92 (L)

———, **Kawabe-R.** & **Takasu-M.** On the Reaction of the Mesonic Proper Field.............................. **9** (1953), 312

——— (see Fukuda-N.) **12** (1954), 79

——— The Cut-off Method in Meson Theory...................... **12** (1954), 699

——— & **Machida-S.** Effects of Virtual Nucleon Pairs to the Electromagnetic Structure of the Nucleon **20** (1958), 216

Goto-Suteo On the Universality of the Weak Interactions............ **17** (1957), 107

——— A Remark on the Lepton Processes...................... **17** (1957), 517 (L)

Goto-T. & **Imamura-T.** Note on the Non-Perturbation-Approach to Quantum Field Theory.................. **14** (1955), 396 (L)

——— (see Araki-H.)........ **17** (1957), 419

——— (see Nozawa-M.) .... **17** (1957), 504 (L)

——— (see Kakudo-Y.)...... **19** (1958), 353

——— (see Ôba-J.) ...... **20** (1958), 982 (L)

Green-H. S. & **Biswas-S. N.** Covariant Solutions of the Bethe-Salpeter Equation **18** (1957), 121

Gupta-S. (see Majumdar-R. C.)................... 8 (1952), 670 (L); **12** (1954), 31

Guttinger-W. Products of Improper Operators and the Renormalization Problem of Quantum Field Theory **13** (1955), 612

Haga-E. Note on the Slow Electrons in a Polar Crystal.................. **11** (1954), 449

——— Self-Energy of Slow Polaron and Variational Method...... **13** (1955), 555 (L)

Hagiwara-H. (see Shôno-N.).. **4** (1949), 364 (L)

——— & **Tanifuji-M.** The Indirect (*p*, *d*) Process................ **18** (1957), 97 (L)

——— & **Tanifuji-M.** Preliminary Note on the Indirect (*p*, *t*) Process.................................. **13** (1975), 322 (L)

Hamada-T. & **Sugawara-M.** Isotopic Spin of Nucleons and Leptons and Anti-Particle Coordinate ....8 (1952), 256 (L)

——— & **Sugawara-M.** Selection Rules for Decays of π-Mesons and *V*-Particles **8** (1952), 363

——— & **Sugawara-M.** Remarks on Lévy's Fourth Order Potential .... **9** (1953), 555 (L)

——— (see Matsumoto-T.) .. **10** (1953), 199

——— Effect of Nucleon Excited State on Magnetic Moment Anomaly.................................... **10** (1953), 309

——— & **Shôno-Y.** A Note on the Damping of Pair Formation in Pseudoscalar Meson Theory .... **13** (1955), 102 (L)

——— A Note on the Specification of Nuclear Potentials ...... **20** (1958), 114 (L)

Hamaguchi-M. The Generalization of Stueckelberg Formalism in the Theory of Quantized Field **11** (1954), 431

——— On the Hydrodynamical Description of the Behaviours of Elementary Particles................. **15** (1956), 533 (L)

——— On the Hydrodynamical Theory in Multiple Particle Production.................................. **19** (1958), 741 (L)

Hanawa-S. & **Kanesawa-S.** On the Electromagnetic Self-Energy of Meson .... **4** (1949), 385 (L)

——— (see Nakano-T.) .. **5** (1950), 333 (L)

——— & **Miyazima-T.** Radiative Corrections to Decay Processes. I——*The Meson Decay*——.................... **5** (1950), 459

——— (see Nakano-T.)...... **5** (1950), 1014

——— & **Miyazima-T.** Radiative Correction to Decay Processes. III——*Forbidden Beta-Transitions caused by Radiation Processes*—— **7** (1952), 391

——— (see Namiki-M.).. **12** (1954), 694 (L)

———, **Namiki-M.** & **Chiba-S.** Low Energy Limits of Photon-Nucleon and Pion-Nucleon Collisions...... **14** (1955), 551

——— Mathematical Formulation of the Gell-Mann-Nishijima Scheme for New Particles **17** (1957), 592

Hara-O. (see Sakata-S.).... **2** (1947), 30 (L)

——— Theory of Interaction of Elementary Particles. II——*The Electromagnetic Self-Energy of the Elementary Particles*—— (*cf.* Errata: Vol. 3, p. 323).. **3** (1948), 188

——— & **Umezawa-H.** On the Interaction between a Negative Meson and a Proton..................... **3** (1948), 212 (A)

Hara-O. (*continued*)

(see Tanikawa-Y.) ....**3** (1948), 213 (A)

—— & **Tokano-T.** The Electromagnetic Shift of Energy Levels......................................**3** (1948), 316 (L)

———— & **Tatsuoka-M.** Theory of the Interaction of Elementary Particles. III —— *On the Nature of the C-Meson* —— **3** (1948), 369

& **Tokano-T.** On the Energy Level Shifts of Atoms due to the Interaction between the Electron and the Electromagnetic Field.........**4** (1949), 103

——— & **Shimazu-H.** On Yukawa's Theory of Non-Local Field.. **5** (1950), 1055 (L)

& **Shimazu-H.** On Yukawa's Theory of Non-Local Field. I——*The Case of Free Field*——......**7** (1952), 255

— & **Shimazu-H.** Remark on the Self-Energy Problem of the Photon ....**7** (1952), 591 (L)

& **Shimazu-H.** A New Attempt on the Self-Energy Problem of the Photon **8** (1952), 265

———— (see Shimazu-H.)..**8** (1952), 385 (L)

——— & **Shimazu-H.** On Yukawa's Theory of Non-Local Fields. II —— *The Interaction of Non-Local Fields*——.......................... **9** (1953), 137

———— & **Okonogi-H.** On Gauge Invariance in Electrodynamics and the Self-Energy Problem of the Photon...................................**9** (1953), 184 (L)

———— Electromagnetic Shifts of Energy Levels and *C*-Meson Hypothesis................................**9** (1953), 322 (L)

——— & **Marumori-T.** The Theory of the Structure of Elementary Particles...................................**9** (1953), 559 (L)

——, **Marumori-T., Ohnuki-Y.** & **Shimodaira-H.** On the Conservation of Heavy Particles.........**10** (1953), 114 (L)

—— & **Okonogi-H.** On Gauge Invariance in Electrodynamics and the Self-Energy Problem of the Photon.................................... **10** (1953), 191

——, **Marumori-T., Ohnuki-Y.** & **Shimodaira-H.** On the Universal Fermi Interaction.............. **10** (1953), 470 (L)

(see Ohnuki-Y.)..**10** (1953), 697 (L)

, **Marumori-T., Ohnuki-Y.** & **Shimodaira-H.** An Attempt to the Unified Description of Elementary Particles **12** (1954), 177

——— & **Fujii-Y.** An Attempt of Generalizing the Hypothesis of Charge Independenec................**16** (1956), 149 (L)

& **Fujii-Y.** A Conjecture on the Possible Existence of New Hyperons.... .... **16** (1956), 150 (L)

& **Fujii-Y.** An Attempt of Generalizing the Hypothesis of Charge Independence. I——*Selection Rule for the Decay Process*—— **17** (1957), 313

, **Fujii-Y.** & **Ohnuki-Y.** An Attempt of Generalizing the Invariance of the Theory under the Charge Conjugation......................**17** (1957), 819 (L)

-, **Fujii-Y.** & **Ohnuki-Y.** Pion-Nucleon Interaction according to the Previous Theory........**17** (1957), 820 (L)

, **Fujii-Y.** & **Ohnuki-Y.** The Annihilation of Antinucleon according to the Previous Theory..**17** (1957), 822 (L)

——, **Fujii-Y.** & **Ohnuki-Y.** An Attempt at Reformulating Pion-Nucleon Interaction. I——*Introduction of K-Space* ——..........................**19** (1958), 129

& **Fujii-Y.** An Attempt at Reformulating Pion-Nucleon Interaction. II ——*Scattering of Antiproton by Nucleon*—— **20** (1958), 89

Hara-Y. (see Ohmura-T.)......**20** (1958), 82

(see Kuroboshi-E.) **20** (1958), 163

———— & **Kawarabayashi-K.** A Remark on the Anomalous Magnetic Moment in the Static Model........ **20** (1958), 252 (L)

Harada-K. (see Oda-N.) **15** (1956), 545

Hsebe-T. (see Yoshikawa-S.)....**10** (1953), 359 (L); **11** (1954), 496 (L); **12** (1954), 403 (L)

Hasegawa-H. (see Kita-H.)..**4** (1949), 371 (L)

—— & **Kita-H.** Three Dimensional Calculations of the Cosmic Ray Intensities. I......................**4** (1949), 376 (L)

———— (see Ueda-A.), ... **8** (1952), 262 (L)

— Tomonaga Approximation in Meson Theory.......... **8** (1952), 494 (L)

Hasegawa-H. *(continued)*

—— Intermediate Coupling Meson Theory of Nuclear Forces. I——*General Formulation*—— **13** (1955), 47

—— (see Komatsuzawa-A.) **14** (1955), 65

—— (see Nogami-Y).......**15** (1956), 137

—— Pion Theory of the Anomalous Magnetic Moment of the Nucleon...... .... Sup. **5** (1958), 17

Hasegawa-K. & **Azuma-S.** The π-Nucleon Scattering and the Damping Effect...... .... **10** (1953), 240 (L)

—— (see Nakabayasi-K.)............. .... **10** (1953), 694 (L); **10,** 696 (L)

—— & **Azuma-S.** On the Multiple Scattering Phase Shifts and the Nuclear Force——*Scalar Pair Theory*—— .... **12** (1954), 546 (L)

——, **Matsuyama-S.** & **Akiba-T.** On the Analysis of the Anomalous of Magnetic Moment of the Nucleon in the Second Order Calculations....... **12** (1954), 548 (L)

—— & **Azuma-S.** Multiple Scattering Phase Shifts and Nuclear Potential...... ....**13** (1955), 360

—— (see Nakabayashi-K.)..**17** (1957), 581

Hasegawa-S. On the Air Shower Core.... .... **17** (1957), 603 (L)

Hashitsume-N. On the Rate of Irreversible Production of Entropy....**7** (1952), 225

—— A Statistical Theory of Linear Dissipative Systems. I, II **8** (1952), 461; **15** (1956), 369

Hasino-T. (see Huzinaga-S.)............ ....**10** (1953), 279; **18** (1957), 649

—— & **Huzinaga-S.** The Interaction between Two Normal Helium Atoms——*A Consistent Treatment*—— **20** (1958), 631

Hatanaka-T. (see Taketani-M.).......... ....**15** (1956), 89

Hatano-S., **Kaneno-T.** & **Shindo-M.** The Effects of Heavy Particles on π^--Meson-Proton Scattering............**12** (1954), 167

—— Magnetic Exchange Moment to order eg^4 in Adiabatic Approximation.. .... **14** (1955), 170 (L)

—— & **Kaneno-T.** On the Exchange Magnetic Moment of the Two Nucleon System.......................**15** (1956), 63

—— (see Iwadare-J.)...**15** (1956), 185 (L)

—— Note on the Decay of Ξ Particles .... **16** (1956), 248 (L)

—— (see Ihara-C.) **20** (1958), 356

Hatta-T. (see Katsura-S.)..**5** (1950), 330 (L)

Hayakawa-S., **Miyamoto-Y.** & **Tomonaga-S.** On the Elimination of the Auxiliary Condition in the Quantum Electrodynamics..................**2** (1947), 95 (A)

—— & **Tomonaga-S.** On the Theory of Air Shower initiated by Secondary Soft Rays.................... **2** (1947), 161 (L)

—— Cosmic-Ray Underground......... ......**3** (1948), 199 (L); Sup. **1** (1955), 213

—— Note on the Two Meson Hypothesis..**3** (1948), 200 (L); Sup. **1** (1955), 214

—— & **Miyamoto-Y.** On the Classical Model of the Bremsstrahlung of the Vector Meson................**3** (1948), 209 (A)

—— & **Miyamoto-Y.** On the Classical Model of the Meson Production in the Collision between Nucleons............. ....**3** (1948), 209 (A)

—— Remarks on the Experiments of the Scattering of Meson..**3** (1948), 210 (A)

—— On the Multiple Production of Meson...................**3** (1948), 321 (L)

—— (see Sasaki-M.)....**3** (1948), 454 (L)

—— Some Remarks on Cosmic-Ray Burst.....................**3** (1948), 458 (L)

—— & **Nishimura-J.** Phenomenological Treatment on the Production of Cosmic-Ray Mesons (*cf.* Errata: Vol. 4, p. 397).....................**4** (1949), 232 (L)

—— (see Fujimoto-Y.)....**4** (1949), 233 (L); **4,** 381 (L); 4, 502; **4,** 571 (L); **4,** 575 (L); **4,** 576 (L); **4,** 579 (L); **4,** 579 (L); **5** (1950), 144(L); **5,** 196; **5,** 315 (L); **5,** 318(L); **5,** 669; **6** (1951) 96; **10** (1953), 113 (L); Sup. **1.** (1955), 231; Sup. **1,** 232

—— & **Tomonaga-S.** Cosmic-Ray Underground. I, II........**4** (1949), 287, 496

—— On the Life of the Neutral Meson ....**4** (1949), 386 (L)

—— (see Fukuda-H.)...............**4** (1949), 388 (L); **5** (1950), 283; **5,** 352; **5,** 993

—— & **Yamaguchi-Y.** Another τ-Meson..................**4** (1949), 570 (L)

—— & **Nishimura-J.** Remark on the Energy Distribution of Disintegrated μ-Mesons .... **4** (1949), 577 (L)

Hayakawa-S. (*continued*)

—— & **Nishimura-J.** Soft Component in Upper Atmosphere....**4** (1949), 578 (L)

Note on Varitrons..**5** (1950), 145 (L)

— Excess Electrons in Lower Atmosphere and γ-Decay of Neutral Mesons.. ....**5** (1950), 158 (L)

——— Note on the Interaction of Meson with Nucleon ....**5** (1950), 319 (L)

—— & **Nishimura-J.** Interpretation of the Second Maximum of Rossi Curve.... ....**5** (1950), 326 (L)

———, **Mano-K.** & **Miyazima-T.** Cosmic-Ray Underground....**5** (1950), 495 (L)

———, **Mano-K.** & **Miyazima-T.** Cosmic-Ray Underground. III....**5** (1950), 844

—— (see Aidzu-K.) **5** (1950), 931

——— & **Nishimura-J.** Interpretation of the Second Maximum of Rossi Curve **5** (1950), 948

—— Propagation of the Cosmic Radiation through Interstellar Space......... ....**8** (1952), 571 (L)

———, **Kawaguchi-M.** & **Minami-S.** Kinematical Studies of Pion-Nucleon Interactions................**11** (1954), 332 (L)

& **Kikuchi-K.** Interpretation of the Excitation of Gamma-Rays by 10 MeV Neutrons...............**11** (1954), 513

—, **Kawaguchi-M.** & **Minami-S.** Kinematical Investigations of Meson-Nucleon Reactions. (*cf.* Errata: Vol. 12, p. 814)......................**12** (1954), 355

——— & **Sasakawa-T.** On the Direct Interaction in Nuclear Reactions........ ....**12** (1954), 401 (L)

——— & **Kikuchi-K.** Gamma Ray Energy Spectrum from Iron bombarded by 14-MeV Neutrons..............**12** (1954), 578

———, **Kawai-M.** & **Kikuchi-K.** Nuclear Reactions at Moderate Energies and Fermi Gas Model (*cf.* Errata; Vol. 15, p. 188)......................**13** (1955), 415

——— A Possible Effect of Cosmic Rays on Celestial Chemical Composition...... ....**13** (1955), 464 (L)

& **Yoshida-S.** Inelastic Scattering of Neutrons by Rotational Excitation **14** (1955), 1

, **Ito-K.** & **Terashima-Y.** Positive Temperature Effect of Cosmic Rays.... ....**14** (1955), 497

Supernova Origin of Cosmic Rays **15** (1956), 111

& **Hokkyo-N.** Electromagnetic Radiation from Electron Plasma........ ....**15** (1956), 193

& **Kitao K.** Energy Loss of a Charged Particle traversing Superconductors (*cf.* Errata: Vol. 17, p. 129)..... ....**16** (1956), 131

& **Kitao-K.** Energy Loss of a Charged Particle traversing Ionized Gas and Injection Energies of Cosmic Rays (*cf.* Errata: Vol. 17, p. 129)..**16** (1956), 139

, **Hayashi-C.**, **Imoto-M.** & **Kikuchi-K.** Helium Capturing Reactions in Stars (*cf.* Errata: Vol. 17, p. 618)... ....**16** (1956), 507

——— & **Marumori-T.** Relation between the Nuclear Collective Model and the Individual Particle Model with Configurational Mixing **17** (1957), 43

——— & **Marumori-T.** A Remark on the Moments of Inertia of Rotating Nuclei **18** (1957), 396

——— & **Terashima-Y.** Efficiency of Acceleration of Relativistic Particles in the Crab Nebula............ **18** (1957), 555 (L)

High Energy Gamma-Rays from the Crab Nebula........ **19** (1958), 219 (L)

———, **Kawaguchi-M.** & **Minami-S.** Phenomenological Theory of Pion-Nucleon Reactions.............Sup. **5** (1958), 41

———, **Ito-K.** & **Terashima-Y.** Origin of Cosmic Rays...........Sup. **6** (1958), 1

Hayashi-C. Giant Stars producing Energy by C-N Reactions.............**2** (1947), 127

Proton-Neutron Concentration Ratio in the Expanding Universe at the Stages preceding the Formation of the Elements.....................**5** (1950), 224

& **Munakata-Y.** On a Relativistic Integral Equation for Bound States (*cf.* Errata: Vol. 8, p. 142)....**7** (1952), 481

—— Hamiltonian Formalism in Non-Local Field Theories.........**10** (1953), 533

– On Field Equations with Non-Local Interaction........**11** (1954), 226 (L)

(see Hayakawa-S.)....**16** (1956), 507

& **Nishida-M.** Formation of Light Nuclei in the Expanding Universe..... ....**16** (1956), 613

Hayashi-C. (*continued*)

——, **Nakano-T., Nishida-M., Suekane-S. & Yamaguchi-Y.** The Catalysis of Nuclear Fusion Reactions by μ^--Mesons .... **17** (1957), 615 (L

—— Giant Stars with Shell Sources of C-N and p-p Reactions...... **17** (1957), 737

, **Nishida-M., Ôyama-N. & Tsuda-H.** Stellar Syntheses of the α-Particle Nuclei heavier than Ne^{20} .... **20** (1958), 110 (L

Heisenberg-W. The Yukawa Theory of Nuclear Forces in the light of Present Quantum Theory of Wave Fields........ .... **5** (1950), 523

Heitler-W. (see Bleuler-K.).... **5** (1950), 600

Higashi-S., Oda-M., Oshio-T., Shibata-H., Watanabe-K. & Watase-Y. On the Energy Dependence of the Cross Section for the Production of the Penetrating Shower Underground .... **16** (1956), 250 (L)

Hiida-K. & Machida-S. Ward's Identity in Neutral Scalar Meson-Nucleon System .... **13** (1955), 219 (L)

& **Sawamura-M.** Note on the Lehmann's Modified Propagators......... .... **14** (1955), 167 (L)

, **Iwadare-J. & Machida-S.** On the One Pion Exchange Potential........ .... **15** (1956), 189

Some Identities for Renormalization Constants in S (S) and PS (PS) Meson Theories........ **17** (1957), 520 (L)

A Kinematical Test for the Relation between the Coupling Constants in Meson Theory .... **17** (1957), 605 (L)

—— & **Sawamara-M.** Some Considerations on the High-Energy Electron Proton Scattering and the Nucleon Mass Difference.................. **18** (1957), 451

Hijikata-K. (see Nakamura-Takashi) **8** (1952), 387

Hirano-M. (see Tanikawa-Y.)........... .... **2** (1947), 93 (A)

Hiroike-K. The Second Virial Coefficient at Very Low Temperatures .... **10** (1953), 575 (L)

Hiroishi-S. (see Noma-S.).. **3** (1948), 216 (A)

— & **Tanaka-H.** Note on the Deuteron Problem of the Mixed Meson Theory of Pseudovector and Pseudoscalar Fields.................... **4** (1949), 231 (L)

& **Tanaka-H.** Note on the High Energy Neutron-Proton Scattering...... .... **5** (1950), 134 (L)

Hirokawa-S., Komori-H. & Ogawa-S. The Anomalous Magnetic Moment of μ-Meson.................. **14** (1955), 494 (L)

Hirosige-T. (see Tsuneto-T.)........... .... **14** (1955), 267

Hokkyo-N. (see Hayakawa-S.).......... .... **15** (1956), 193

Honda-N. (see Matsubara-T.)............ .... **16** (1956), 447

Hori-J. & Asahi-T. On the Vibration of Disordered Linear Lattice. I.. **17** (1957), 523

—— On the Vibration of Disordered Linear Lattice. II............ **18** (1957), 367

Hori-S. (see Katayama-Y.).............. .... **4** (1949), 565 (L)

—— & **Sawada-K.** On the Anomalous Magnetic Moment on Nucleon in Vector and Pseudovector Meson Theory........ .... **5** (1950), 333 (L)

Pri la Koncepto de la Liber Kampo........................ **6** (1951), 903 (L)

On the Well-Ordered S-Matrix (*cf.* Errata; Vol. 8, p. 142).... **7** (1952), 578

—— On the Convergenece of the S-Matrix Series............ **8** (1952), 569 (L

—— On the Relativistic Two-Body Problem.................. **9** (1953), 184 (L)

On the Transition Amplitude in Quantum Electrodynamics **9** (1953), 299

On the Inverse Power Expansion of the Svac $[\eta^*,\eta,J]$ and the Green-Functions.................. **10** (1953), 575 (L)

(see Oneda-S.) ....
15 (1956), 300 (L); **15**, 302 (L); **15**, 304 (L

— On the Determination of the Spins of Λ^0 and θ^0 Particles........ **16** (1956), 189

, **Segawa-H. & Wakasa-A.** On the Longitudinal and Transverse Polarization of Positrons in μ^+-Meson Decay.. .... **19** (1958), 249

Horie-H., Umezawa-M., Yamaguchi-Y. & Yoshida-S. On the Excited States of Even Nuclei.............. **6** (1951), 254 (L)

, **Tamura-T. & Yoshida-S.** Effect of Tensor Forces on the Elastic Scattering of Nucleons by Deuterons .... **6** (1951), 623 (L)

Horie-H. *(continued)*

& **Yoshida-S.** On the Quadrupole Moments of Light Nuclei.....**6** (1951), 829

——, **Tamura-T.** & **Yoshida-S.** Effects of Tensor Forces on the Neutron-Deuteron Scattering..........**8** (1952), 341

—— —— Sipn-Spin and Spin-Other-Orbit Interactions..................**10** (1953), 296

(see Arima-A.)....**11** (1954), 143; **11**, 509 (L); **12** (1954), 623; **17** (1957), 567

—— (see Noya-H.)......Sup. **8** (1958), 33

Horie-S. (see Enomoto-S.).....**7** (1952), 353

Hsieh-S. H. & **Nakagawa-M.** Nature of Nuclear Force indicated by the Photodisintegration of the Deuteron. I ....**15** (1956), 79 (L)

—— Nature of Nuclear Forces indicated by the Photodisintegration of the Deuteron. II, III ....**16** (1956), 68 (L); **19** (1958), 453 (L)

—— Ratio of Hyperons produced by Cosmic Rays..............**18** (1957), 209 (L)

—— On the Observability of a New Hyperon.................**18** (1957), 211 (L)

—— Photodisintegration of the Deuteron near 11 MeV **18** (1957), 637

Husimi-K. On the Hamiltonian Form of the General Field Equations..............................**2** (1947), 97 (A)

—— & **Syozi-I.** The Statistics of Honeycomb and Triangular Lattice. I...................................**5** (1950), 177

—— & **Utiyama-R.** Canonical Theory of Quantum Electrodynamics..**5** (1950), 718

—— & **Nishiyama-T.** An Algebraic Theory of the Density Matrix. I....................................**5** (1950), 909

& **Utiyama-R.** Note on Belinfante's New Theory.......**6** (1951), 432 (L)

Miscellanea in Elementary Quantum Mechanics. I, II.................................**9** (1953), 238, 381

—— & **Otuka-K.** Miscellanea in Elementary Quantum Mechanics. III..................................**10** (1953), 173

Huzinaga-S. (see Araki-G.)....**6** (1951), 673

—— A Note on the Elastic Frequency Distribution Function of Crystal ....**9** (1953), 678 (L)

& **Hasino-T.** On the Elastic Frequency Distribution Function of Simple Crystals......................**10** (1953), 279

—— A Device to avoid Difficult Integrals in Calculations on Molecular Structure .... **14** (1955), 492 (L)

(see Araki G.)........**15** (1956), 307

Interaction between Electrons in Two-Dimensional Free Electron Model for Conjugated Systems...... **15** (1956), 495

One Center Expansion of Molecular Wave Function **15** (1956), 501

One-Center Expansion of Molecular Wave Function. II——*Lower Excited States of H_2*—— **17** (1957), 162

One-Center Expansion of Molecular Wave Function. III——*He-He Repulsive Potential*——............**17** (1957), 169

He-He Repulsive Potential.................................**17** (1957), 512 (L)

The Repulsive Potential between Two Normal Helium Atoms..**18** (1957), 139

—— & **Hasino-T.** Electronic Energy Levels of Polyene Chains....**18** (1957), 649

—— Molecular Orbital Treatment of $1s\sigma\ 2p\sigma\ ^3\Sigma_u$ State of H_2.. **19** (1958), 125 (L)

On the Orbital Approach to the Many-Electron Problem in Molecule.................................... **20** (1958), 15

—— (see Hasino-T.) **20** (1958), 631

Ichikawa-Y. (see Sato-I.).......................................**12** (1954), 812 (L)

—— Theory of Collective Oscillation of Electrons in Solids **18** (1957), 247

A Possible Size Effect on the Plasma Oscillation of Electrons in Solids............................ **19** (1958), 585 (L)

—— Equilibrium Properties of Classical Electron Gas in Uniform Positive Ion Distribution..................**20** (1958), 715

Ichimura-H. A Method in Quantum Statistical Mechanics. I —— *General Theory*——.................. **11** (1954), 374

—— A Method in Quantum Statistical Mechanics. II——*The Degenerate Fermi-Dirac Assembly*——..........**11** (1954), 385

—— A Method in Quantum Statistical Mechanics. III——*Virial Expansion for the Quantum Gas*——........**11** (1954), 519

—— Quantum Statistical Mechanics of

Ichimura-H. (*continued*)
Electron-Phonon System......**15** (1956), 151

——— Quantum Statistical Mechanics of Electron-Phonon System. II——*Specific Heat and Spin Paramagnetic Susceptibility*——..................**20** (1958), 415

Ida-K. Production of Vector π-Mesons by High Energy Nucleon-Nucleon Collisions ....**6** (1951), 258 (L)

——— (see Nishimura-J.)..**6** (1951), 905 (L)

——— Nuclear Cross Sections for Fast Neutrons and Interaction between High Energy Nucleons..............**7** (1952), 269

Ida-M. On the Systematization of the Strongly Interacting Particles.......... ....**17** (1957), 733 (L)

——— Some Remarks on the Scattering Problem..................**20** (1958), 979 (L)

Igarasi-S. & **Takano-T.** Elastic Scattering of 24.6 MeV Alpha Particles by Au.. ....**17** (1957), 124 (L)

Igi-K. Dispersion Relation for *K* Meson-Nucleon Scattering...........**19** (1958), 238

——— Dispersion Relation for *K* Meson-Nucleon Scattering and Its Application... ....**20** (1958), 403

——— & **Kawarabayashi-K.** Meson-Meson Interaction........**20** (1958), 576 (L)

Ihara-C. & **Hatano-S.** Composite Model of Pion and Pion-Nucleon Interaction... ....**20** (1958), 356

Iino-R. (see Namiki-M.)....Sup. **5** (1958), 65

Ikeda-Kazuyoshi On the Theory of Condensing Systems........**11** (1954), 336 (L)

——— On the Theory of Condensation.. ....**16** (1956), 341

——— Cluster Theory of Condensing Systems.......................**19** (1958), 653

Ikeda-Kiyomi, Kobayasi-M., Marumori-T., Nagata-S. & **Shiozaki-T.** Foundation of Deformed Potential Model for Nuclear Rotation............**20** (1958), 960

Ikeda-M. (see Takeno-H.)......**6** (1956), 837

——— On the Approximation Solutions of the Unified Field Theory of Einstein and Schrödinger.........**7** (1952), 127 (L)

——— Note on the Invariancy of Some Fundamental Equations of Physics...... ....**8** (1952), 382 (L)

——— On a Five Dimensional Representation of the Electromagnetic and Electron Field Equations in a Curved Space-Time........................**10** (1953), 483

——— On Static Solutions of Einstein's Generalized Theory of Gravitation. I, II.. ....**12** (1954), 17; **13** (1955), 265

——— On Boundary Conditions in the Non-Symmetric Unified Field Theory........ ....**15** (1956), 1

——— & **Miyachi-Y.** On an Extended Framework for the Description of Elementary Particles............**16** (1956), 537

——— On Einstein's Relativistic Theory of the Non-Symmetric Field....**18** (1957) 154

Imaeda-K. (see Kobayasi-M.)..**1** (1946), 102

——— Linearization of Minkowski Space and Five-Dimensional Space ....**5** (1950), 133 (L)

Imai-I. On the Analogy between Born's Electrostatic Field and Compressible Flow .... **2** (1947), 97 (A)

Imamura-T. (see Utiyama-R.)........... **6** (1951), 587; **7** (1952), 328; **8** (1952), 77; **9** (1953), 181 (L); **9**, 431; **11** (1954), 606 (L)

———, **Sunakawa-S.** & **Utiyama-R.** On the Construction of *S*-Matrix in Lagrangian Formalism..........**11** (1954), 291

——— Potential in Quantum Field Theory................ **12** (1954), 402 (L)

——— (see Sunakawa-S.)....**12** (1954), 642

——— Potential in Quantum Field Theory **13** (1955), 183
cf. Errata: Vol. **14**, p. 265)

——— (see Goto-T.)......**14** (1955), 396 (L)

——— Criticism on the Assumptions in the Formal Scattering Theory.......... .... **18** (1957), 51

——— A New Approach to a Bound State...................... **18** (1957), 559

Imoto-M. (see Hayakawa-S.)..**16** (1956), 507

Inoue-Kenzo (see Muto-T.)............. ....**5** (1950), 1033; **8** (1952), 13

——— On the κ-Meson....**9** (1953), 323 (L)

Inoue-Kazuhiko, Machida-S., Taketani-M. & **Toyoda-T.** Pion Theory of Nuclear Forces..................... **15** (1956), 122

Inoue-Takeo (see Muto-T.) **8** (1952), 13

Inoue-Takesi (see Sakata-S.)........... ....**1** (1946), 143; Sup. **1** (1955), 203

——— & **Ogawa-S.** On the Correlation between Yukawa Particle and Meson.... ...... **3** (1948), 319 (L); Sup. **1** (1955), 217

Inui-T. Unified Theory of Recurrence Formulas. I, II..............**3** (1948), 168, 244

—— & **Uemura-Y.** Theory of Color Centers in Ionic Crystals. I——*Electronic States of F-Centers in Alkali Halides*——........................ **5** (1950), 252

—— & **Uemura-Y.** Theory of Color Centers in Ionic Crystals. II——*The Temperature Dependence of F-Bands in Alkali Halides*——...........**5** (1950), 395

——, **Uemura-Y.** & **Toyozowa-Y.** On the Electronic Structures of the *M*-Centers in Alkali-Halide Crystals.................................... **8** (1952), 355

—— (see Toyozawa-Y.) **9** (1953), 563; **10** (1953), 57

Ishida-K. & **Takahashi-A.** Pion-Nucleon Scattering by Tamm-Dancoff Method........................... **11** (1954), 611 (L)

Analysis of Neutron-Electron Interaction in the Relativistic Perturbation Theory..................... **18** (1957), 493

—— On the Absorptive Range in the Pion-Nucleon Collision at High Energies .... **20** (1958), 774 (L)

Isidu-T. Effect of Nuclear Motion on the Fine Structure of the Hydrogen.............................. **5** (1950), 307 (L)

—— Effect of Nuclear Motion on the Fine and Hyperfine Structure of Hydrogen .... **5** (1950), 904 (L)

—— Effects of Nuclear Motion on the Fine and Hyperfine Structure of Hydrogen. I, II.................**6** (1951), 48, 154

—— & **Obi-S.** On the Lower Energy Levels of Li^6........... **10** (1953), 690 (L)

Isiguro-E. On the Value of Electric Quadrupole Moment of the Deuteron .... **3** (1948), 312 (L)

—— (see Sakamoto M.) **15** (1956), 37

Isihara-A. (see Toda-M.)......**6** (1951), 480

Iso-C. & **Sato-M.** Hydrodynamical Theory of the Multiple Production of Particles in High Energy Nucleon-Nucleus Collision.. .... **15** (1956), 510 (L)

—— & **Kawaguchi-M.** Note on the Decay Interactions of Hyperons and Heavy Mesons **16** (1956), 177

—— & **Iwao-S.** On the Effects of Heavy Unstable Particles to the Anomalous Magnetic Moments of Nucleons.... .... **16** (1956), 417 (L)

—— (see Amai-S.)..........**17** (1957), 241

—— (see Namiki-M.)...... **18** (1957), 591

Hypothesis of Invariance of CP Alone and Conservation of Parity in Strong Interactions.................**20** (1958), 410

Itabashi-K. On a Covariant Generalization of Tamm-Dancoff Approximation for Pion-Nucleon Scattering..**11** (1954), 227 (L)

—— Renormalization in Generalized Tamm-Dancoff Approximation for Pion-Nucleon Scattering...... **11** (1954), 228 (L)

(see Sato-I.)............**12** (1954), 100 (L); **13** (1955), 341; **14** (1955), 303

—— On the Renormalization in the Tamm-Dancoff Approximation for One-Nucleon Problem. I ——*A Covariant Generalization of the Tamm-Dancoff Method*—— **12** (1954), 494

On the Renormalization in Tamm-Dancoff Approximation for One-Nucleon Problem. II——*Subtraction of Divergences in the Generalized Tamm-Dancoff Equations*——................**12** (1954), 585

—— Electromagnetic Properties of Deuteron. I **17** (1957), 80

Parity-Nonconservation and the Spins of the Strange Particles.................................... **19** (1958), 359

—— On the $|\Delta I|=1/2$ Rule for the Decay of Σ ....**19** (1958), 747 (L)

—— Possible Experimental Tests on the Interactions of Hyperons **20** (1958), 457

Ito-D., **Koba-Z.** & **Tomonaga-S.** Correction due to the Reaction of "Cohesive Force Field" for the Elastic Scattering of an Electron (*cf.* Errata: Vol. 2, p. 217 L) ....**2** (1947) 216 (L)

, **Koba-Z.** **Tomonaga-S.** Errata to the Above Letter...... **2** (1947), 217 (L)

—— (see Koba-Z.)......**3** (1948), 211 (A)

——, **Koba-Z.** & **Tomonaga-S.** Corrections due to the Reaction of "Cohesive Force Field" to the Elastic Scattering of an Electron. I, II **3** (1948), 276, 325

—— (see Baba-K.) .... **4** (1949), 95 (L); **5** (1950), 159 (L)

—— & **Miyazima-T.** On the Gauge-Difficulty in the γ-Decay of the Neutral Scalar Meson........ **4** (1949), 380 (L), 492

"Infrared Catastrophe" -like Diver-

Ito-D. *(continued)*

gency in Meson Decay Process.......... **6** (1951), 1020 (L)

On the Divergence of the Transition Probability due to Energy Conservation in Intermediate States.......... **6** (1951), 1023 (L)

, **Tanaka-H.**, **Watanabe-Y.** & **Yamazaki-M.** Group Theoretical Aspects in *S*-Matrix Theory......**7** (1952), 128 (L)

"Weisskopf-Wigner Method" in *S*-Matrix Formalism........**7** (1952), 326 (L)

—— & **Tanaka-H.** Covariant Subtraction of "Overlapping Divergences" appearing in the Pion-Nucleon Scattering..........**11** (1954), 501 (L)

—— & **Tanaka-H.** On the Variational Solution of Bethe-Salpeter Equation in Pion-Nucleon Scattering.......... **12** (1954), 105 (L)

& **Minami-S.** A Tentative Analysis of π-2π Process ...... **13** (1955), 108 (L)

—— On Double Pion Production in Nucleon-Nucleon Collision....**13** (1955) 123 (L)

——, **Miyamoto-Y.** & **Watanabe-Y.** On the Intermediate Coupling Theory of Pseudoscalar Meson Field and a Nucleon..........**13** (1955), 594

—— & **Minami-S.** Phenomenological Analysis of Elastic π^--p Scattering at 1.4 BeV..........**14** (1955), 198

—— & **Minami-S.** On the Angular Distribution of Double Pion Production in Pion-Nucleon Collisions at 1.4 BeV..........**14** (1955), 482

—— & **Minami-S.** Situation of Rarita-Schwinger Particle as a Model of Nucleon Isobar..........**14** (1955), 487 (L)

, **Ono-M.**, **Kato-T.** & **Takahashi-Y.** The Photodisintegration of Deuteron at High Energy.......... **15** (1956), 74 (L)

—— & **Minami-S.** Meson-Nucleon Scattering in Low Energy Region..**16** (1956), 548

——, **Kobayashi-T.**, **Yamazaki-M.** & **Minami-S.** π^--p Interaction in High Energy Region..........**18** (1957), 264

Itô-H. On the Density Matrix in Hartree-Field. I..........**7** (1952), 406

—— Variational Principle in Hydrodynamics..........**9** (1953), 117

—— Remarks on Quantum Hydrodynamics..........**13** (1955), 543

Ito-K. (see Hayakawa-S.)..........**14** (1955), 497; Sup. **6** (1958), 1

Itô-M. (see Tanaka-S.)........ **9** (1953), 169

Ito-N. A Remark on Convergence Factor.......... **12** (1954), 809 (L)

Iwadare-J. Charge Independence of Nuclear Interaction and High Energy Nucleon-Nucleon Scattering......**9** (1953), 93 (L)

The Effect of the Excited States of Nucleons in High Energy Nucleon-Nucleon Scattering.........**9** (1953), 94 (L)

—— (see Fujii-S.)..........**10** (1953), 478 (L); **11** (1954), 11

& **Nishijima-K.** Dampping Effect in the Gamma-Decay of a Neutral Pion.......... **12** (1954), 108 (L)

—— Nonadiabatic Treatment of Nuclear Forces. I——*Static Limit*——..........**13** (1955), 189

—— Non-Static Corrections to the Fourth Order Nuclear Forces....**13** (1955), 218 (L)

Nonadiabatic Treatment of Nuclear Forces. II——*Nonstatic Corrections*——.......... **14** (1955), 16

, **Otsuki-S.**, **Tamagaki-R.** & **Watari-W.** Determination of the Pion Coupling Constant in Nuclear Forces..........**15** (1956), 86 (L)

—— & **Hatano-S.** Interaction of Antinucleons in Matter. I....**15** (1956), 185 (L)

—— (see Hiida-K.)........ **15** (1956), 189

, **Otsuki-S.**, **Tamagaki-R.** **Watari-W.** Two-Nucleon Problem with Pion Theoretical Potential. I——*Determination of Coupling Constant and Deuteron Problem*——..........**16** (1956), 455

——, **Otsuki-S.**, **Tamagaki-R.** & **Watari-W.** Two-Nucleon Problem with Pion Theoretical Potential. II——*Singlet Even State*——..........**16** (1956), 472

——, **Otsuki-S.**, **Tamagaki-R.** & **Watari-W.** Two-Nucleon Problem with Pion Theoretical Potentiol. III ——*p-p Scattering at 18.2 MeV*——..**16** (1956), 604

——, **Otsuki-S.**, **Takagi-S.**, **Watari-W.** & **Sano-M.** Two-Nucleon Problem with Pion Theoretical Potential. IV—*Photodisintegration of Deuteron at 20 MeV*——..........**16** (1956), 658

Iwadare-J. *(continued)*

—— , **Otsuki-S., Tamagaki-R., Machida-S., Toyoda-T.** & **Watari-W.** Development of Pion Theory of Nuclear Forces....................Sup. **3** (1956), 13

—— , **Otsuki-S., Tamagaki-R.** & **Watari-W.** Verification of Pion Theory of Nuclear Forces (*cf.* Errata: Sup. 5, p. 123)...................Sup. **3** (1956), 32

Iwamoto-F. & **Yamada-M.** Cluster Development Method in the Quantum Mechanics of Many Particle System. I.................................**17** (1957), 543

—— & **Yamada-M.** Cluster Development Method in the Quantum Mechanics of Many-Particle System. II——*Saturation of Nuclear Forces*——.......**18** (1957), 345

—— Cluster Expansion of the Ground State of a Bose Particle System.................................. **19** (1958), 595 (L)

—— An Illustrative Example of the Nuclear Collective Motion .... **20** (1958), 776 (L)

Iwao-S. On the Interaction of *V*-Particles .... **13** (1955), 111 (L)

—— (see Iso-C.)...... **16** (1956), 417 (L)

Iwata-G. The Unified Field Theory combined with the Quantum Theory ....**3** (1948), 207 (A)

—— Combination of the Unified Field with the Corpuscular Field..**3** (1948), 207 (A)

—— Gauge-Spin Transformations and Wave Equations **5** (1950), 983

—— Non-Hermitian Operators and Eigenfunction Expansions......**6** (1951), 216

—— Transformation Functions in the Complex Domain..............**6** (1951), 524

—— Relativity of Representation Coordinates and Its Consequences. I.................................... **6** (1951), 684

—— The Unitary Transformation and the Quantization................**7** (1952), 39

—— Orthogonal Functions in the Complex Domain.................. **7** (1952), 333

—— Realization of Special Contact Transformations with Static Electromagnetic Fields in Vacuo. I, II............................. **8** (1852), 183; **9** (1953), 97

—— A Formulation of Field Theory in Hilbert Space................**11** (1954), 537

—— Orbits of an Electron in Static Electromagnetic Fields. I.....**15** (1956), 513

—— Separable Dynamical Systems of Staeckel in Flat Space........**19** (1958), 369

—— Perfect Imaging Dynamical Systems **19** (1958), 375

Iwata-K. On the Spin of the μ-Meson.....................................**10** (1953), 451

——, **Ogawa-S., Okonogi-H., Sakita-B.** & **Oneda-S.** On the Universality of the Weak Boson-Fermion Interaction.................................. **13** (1955), 19

—— (see Fujii-K.)..**18** (1957), 666 (L); **19** (1958), 475; **19**, 589 (L); **20** (1958), 126

Izumo-K. Elastic Scattering of Alpha-Particles by Heavy Nuclei...**12** (1954), 549 (L)

Izuyama-T. (see Mizuno-Y.)....**18** (1957), 33

—— (see Shimizu-Mikio. ....**20** (1958), 777 (L)

Kajikawa-R., Sasakawa-T. & **Watari-W.** Inelastic Scattering of Nucleons by Nuclei .... **16** (1956), 152 (L)

—— & **Watari-W.** Inelastic Scattering of Nucleons by Light Nuclei.. **18** (1957), 103

Kakudo-Y. & **Kobayakawa-K.** The production Ratio of K^+ to K^- Mesons.. .... **17** (1957), 823 (L)

—— , **Goto-T.** & **Nakasima-R.** π-N Interactions in GeV Region...**19** (1958), 353

—— , **Kammuri-T.** & **Nakasima-R.** Absorption Effects in Antinucleon Phenomena. I, II......**20** (1958), 243 (L), 779 (L)

Kamata-K. (see Nishimura-J.)................ **5** (1950), 899 (L); **6** (1951), 262 (L); **6**, 628 (L); **7** (1952), 185; **11** (1954), 608 (L)

—— & **Nishimura-J.** The Lateral and the Angular Structure Functions of Electron Showers..............Sup. **6** (1958), 93

Kambe-K., Koide-S. & **Usui-T.** Theory of Some Magnetic Properties of Cobalt Tutton Salts.................. **7** (1952), 15

—— & **Usui-T.** Temperature Effect on the Paramagnetic Resonance in Crystals **8** (1952), 302

Kameda-T. & **Miura-I.** On the Second Maximum of the Rossi Transition Curve. I................................ **5** (1950), 323 (L)

—— (see Miura-I.)..... **5** (1950), 325 (L)

—— & **Wada-M.** On the Nucleonic

Components producing Large Cosmic Ray Bursts under Thick Shield (*cf.* Errata: Vol. 7, p. 422)..................**7** (1952), 1

& **Wada-M.** Seasonal Variation of Large Cosmic-Ray Bursts..**7** (1952), 586 (L)

Kamefuchi-S. (see Ogawa-S.)..**5** (1950), 311 (L)

—— Note on the Direct Interaction between Spinor Fields..........**6** (1951), 175

—— (see Umezawa-H.)........**6** (1951), 126 (L); **6,** 428 (L); **6,** 543; **12** (1954), 383

—— , **Nakai-H.** & **Kawabe-R.** *S*-Matrix and Nucleon Isobar....**6** (1951), 891 (L)

—— (see Sakata-S.) **7** (1952), 377

—— & **Umezawa-H.** On the Renormalization in Quantum Electrodynamics **7** (1952), 399

—— Radiative Correction to β-Decay Matrix Element.......... **8** (1952), 137 (L)

—— & **Umezawa-H.** On the Structure of the Interactions of the Elementary Particles. III——*On the Renormalizable Field Theory*——...................**8** (1952), 579

—— & **Umezawa-H.** On the Interaction of the Second Kind......**8** (1952), 675

—— & **Umezawa-H.** On the Structure of the Interaction of the Elementary Particles. IV——*On the Interaction of the Second Kind*——..............**9** (1953), 529

—— On the Structure of the Interaction of Elementary Particles. V——*Interaction of the Second Kind and Non-Local Interaction* ——..............**11** (1954), 273

—— & **Tanaka-S.** On the Jauch Field .... **13** (1955), 334 (L); **14** (1955), 225

—— & **Umezawa-H.** On the Renormalzation Theory of Quantum Electrodynamics..................**15** (1956), 298 (L)

—— (see Umezawa-H.)..................................... **15** (1956), 417 (L)

Kammuri-T., Nakasima-R. & **Takagi-S.** On the Exchange Effect in the Stripping Reactions...............**17** (1957), 306 (L)

—— (see Kakudo-Y.)............................ **20,** (1958), 243 (L); **20,** 779 (L)

Kanai-E. (see Kobayasi-M.)....**1** (1946), 21

—— & **Takagi-S.** Some Remarks on Bopp's Field Theory............**1** (1946), 43

—— On the Non-Infinitesimal Commutation Relations............**2** (1947), 98 (A)

—— Some Remarks on the Non-Infinitesimal Commutation Relations **2** (1947), 135

—— , **Kobayasi-M.** & **Kokaji-S.** On the Electromagnetic Properties of Nucleons. II........................**2** (1947), 151

—— & **Kobayasi-M.** On the Electromagnetic Properties of Nucleons. III.................................. **2** (1947), 179

—— On the Similarity between Chemical and Nuclear Reactions. I ....**3** (1948), 214 (A)

—— On the Quantization of the Dissipative System............ **3** (1948), 440 (L)

—— (see Goto-Shigeo)...**3** (1948), 449 (L)

On the Thermal Reactions in Gas Phase. I, II......................... **4** (1949), 11, 171

Kanamori-J. & **Yosida-K.** Note on the Spin Wave Theory of Antiferromagnetism **14** (1955), 423

—— Theory of the Magnetic Properties of Ferrous and Cobaltous Oxides. I, II **17** (1957), 177, 197

—— Magnetic Properties of the Iron-Group Anhydrous Chlorides..**20** (1958), 890

Kanazawa-A. & **Sugawara-M.** Pion-Nucleon Scattering and Nucleon Isobar **10** (1953), 399

—— & **Sugawara-M.** Anomalous Magnetic Moment of Nucleon and Nucleon Isobar.....................**11** (1954), 231

—— A Note on the Static Approximation of the Nucleon Anomalous Magnetic Moment..................**14** (1955), 397 (L)

—— & **Sugawara-M.** Nucleon Magnetic Moments in Ps-Ps Intermediate Coupling Meson Theory............**16** (1956), 95

—— On the Static Approximation of the γ_5 Meson Theory........ **19** (1958), 330

—— , **Furui-S.** & **Sakuma-T.** Electromagnetic Properties of Nucleons **20** (1958), 149

—— (see Tsuchida-T.)..**20** (1958), 395 (L)

—— (see Sakuma-T.)......**20** (1958), 835

Kanazawa-H. Note on the Classical Equations of Motion of Nucleons .... **5** (1950), 1050 (L)

—— On Tensor Forces and Saturation Requirements................. **6** (1951), 126

—— (see Endo-S.) ....**6** (1951), 436 (L); **8** (1952), 252 (L)

—— , **Koide-S,** & **Noguchi-T.** On the

Kanazawa-H. *(continued)*
Lattice Vibration and the Effective Mass of Conduction Electrons **9** (1953), 288
——— On the Interaction of Electrons with Lattice Vibrations.......**10** (1953), 275
——— On the Radiative Interaction of Phonon Field with Electrons .... **10** (1953), 471 (L)
——— On the Theory of Plasma Oscillations in Metals.............. **13** (1955), 227
——— Coulomb Interactions and the Diamagnetism of Free Electrons. I, II.... .... **15** (1956), 273; **17** (1957), 1
——— Note on Bloch-Nordsieck Transformation and Electron-Lattice Interaction.. ....**17** (1957), 304 (L)
——— (see Donovan-B.)..**17** (1957), 813 (L)
——— On the Subsidiary Conditions in the Bohm-Pines Theory of Electron Plasma **18** (1957), 287
——— & **Tani-S.** Effect of Electron Exchange on the Dispersion Relation of Plasma Oscillations...........**19** (1958), 153
——— On the Positronium in Metals.... .... **20** (1958), 400 (L)

Kaneko-S., Kubozoe-T., Okazaki-M. & **Takahata-M.** The Non-Mesonic Photonuclear Reactions initiated by High Energy μ-Mesons........ **13** (1955), 461 (L)

Kaneno-T. (see Hatano-S.).............. .... **12** (1954), 167; **15** (1956), 63

Kanesawa-S. & **Tomonaga-S.** On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. IV, V ——*Case of Interacting Electromagnetic and Meson Fields*——......**3** (1948), 1, 101
——— On a Relativistically Invariant Quantization of the First Order Wave Equations.................**3** (1948), 210 (A)
——— (see Baba-K.)......**3** (1948), 443 (L)
——— Note on the Interaction Representation in case of Meson Field interacting with Electromagnetic Field............. ....**4** (1949), 236 (L)
——— On the Meson Pair Theory of Nuclear Forces in the Interaction Representation................... **4** (1949), 238 (L)
——— & **Koba-Z.** A Remark on Relativistically Invariant Formulation of the Quantum Field Theory........**4** (1949), 297
——— (see Hanawa-S.)....**4** (1949), 385 (L)
——— Quantum Theory of Generalized Local Fields ....**5** (1950), 157 (L)
——— On Mixed Field Theory and Vacuum Polarization......**5** (1950), 492 (L)

Kanki-T., Murata-K. & **Sunakawa-S.** The Functional Integrals in Quantum Theory **17** (1957), 7

Kanô-K. & **Naya-S.** Antiferromagnetism. The Kagomé Ising Net......**10** (1953), 158

Kasuya-T. The Critical Velocity and Frictions in the Flow of Liquid Helium II.. ....**9** (1953), 87 (L)
——— Damped Oscillation in the Surface Film of Liquid Helium II..**9** (1953), 89 (L)
——— Gorter's Friction and Saturation of Surface Flow Rate .... **9** (1953), 90 (L)
——— The Relaxation Process in Ferromagnetic Resonance Absorption .... **12** (1954), 802 (L)
——— The Relaxation Process in Ferromagnetic Resonance Absorption ——*The Effect of the Conduction Electron*——.. .... **12** (1954), 803 (L)
——— On the Theory of Thermal Conductivity of Monovalent Metals.......... ....**13** (1955), 561
——— A Theory of Metallic Ferro- and Antiferromagnetism on Zener's Model.... .... **16** (1956), 45
——— Electrical Resistance of Ferromagnetic Metals................. **16** (1956), 58
——— (see Nakajima-S.)..**18** (1957), 662 (L)
——— Superconductivity of Ferromagnetic Metals................**20** (1958), 980 (L)

Katayama-Y. & **Takagi-S.** Note on the Relativistic Formulation of Belinfante's Transformation.......... **4** (1949), 240 (L)
——— An Attempt to Pauli's Regulator *cf.* Errata: Vol. 4, p. 581 .... **4** (1949), 372 (L)
——— & **Sawada-K.** On the *C*-Meson Theory .... **4** (1949), 377 (L)
——— On the Self-Energy of the Neutretto..................... **4** (1949), 396 (L)
——— & **Hori-S.** Remarks on the Ambiguity in Quantum Field Theory........ .... **4** (1949), 565 (L)
———, **Sawada-K.** & **Takagi-S.** Five Dimensional Approach to Regularized Quantum Electrodynamics......**5** (1950), 14
——— Problems of Ambiguity in Quantum Field Theory **5** (1950), 272

Katayama-Y. (*continued*)

& **Takagi-S.** Note on Five-Dimensional Space and the Self-Energy of Electron........................**5** (1950), 336 (L)

——— On the Positron Theory of Vacuum ....**5** (1950), 906 (L)

Note on the Energy-Momentum Tensor..................**5** (1950), 1054 (L

(see Tokuoka-Z.)..**6** (1951), 132 (L)

On the Positron Theory of Vacuum **6** (1951), 309

——— Transformation Function in Quantum Electrodynamics......**7** (1952), 265 (L)

& **Yamazaki-K.** Convergence Problem in Quantum Electrodynamics.... ....**7** (1952), 601 (L)

——— Non-Local Field and Non-Local Interaction................**8** (1952), 381 (L

——— The Theory of the Interactions with Higher Derivatives..**9** (1953), 561 (L)

Theory of the Interactions with Higher Derivatives and Its Applications to the Non-Local Interaction......**10** (1953), 31

——— Quantum Numbers for Lepton Processes...................**17** (1957), 510 (L)

Kato-M. & **Takeda-G.** Conservation Laws in the Isotopic Spin and Their Violation by the Electromagnetic Interaction...... .... Sup. **7** (1958), 35

Kato-T. Example in Which the Perturbation Method fails..........**3** (1948), 313 (L

- - (see Kodaira-K.)....**3** (1948), 439 (L)

On the Convergence of the Perturbation Method. I, II-1, II-2............. ....**4** (1949), 514; **5** (1950), 95, 207

——— Note on Schwinger's Variational Method.......................**6** (1951), 295

——— Upper and Lower Bounds of Scattering Phases.................**6** (1951), 394

——— (see Ito-D.)........**15** (1956), 74 (L)

Kato-Y. & **Morita-M.** On the β-γ Angular Correlations of Tm^{170} and Sb^{124} —— *VT Interaction*—— ....**13** (1955), 276 (*cf.* Errata: Vol. 14, p. 174)

Katsumori-H. (see Tanaka-T.)..**6** (1951), 17

Composite States of Two Fermions through Fermi-Type Interaction........ ....**11** (1954), 505

(see Oishi-Yasuo.)..**12** (1954), 109 (L)

Effect of the Pauli Moment on the γ-Decay of Neutral Meson............. ....**12** (1954), 241 (L

Mass Difference of Σ^+, Σ^- and Σ^0 Hyperons **17** (1957), 803

Anomarous Magnetic Moments of Hyperons and Mirror Theorem **18** (1957), 375

——— Mass Levels and Relative Parities of Baryons...............**19** (1958), 342 (L)

& **Shimoura-K.** Baryon Mass Spectrum................**20** (1958), 578 (L

Katsura-S., Hatta-T. & **Morita-A.** On the Conception of the Energy Band in the Perturbed Periodic Potential............ ....**5** (1950), 330 (L)

——— & **Fujita-H.** A Model for the Condensation Phenomena......**5** (1950), 500 (L)

——— & **Fujita-H.** Some Remarks on the Condensation Pheomena....**5** (1950), 997

& **Fujita-H.** Point of Condensation and the Volume Dependency of the Cluster Integrals..............**6** (1951), 498

——— On the Theory of Cooperative Phenomena **11** (1954), 476

Phase Transition of Husimi-Temperley Model of Imperfect Gas **13** (1955), 571

——— On the Bose-Einstein Condensation **16** (1956), 589

——— Cluster Sums and Related Coefficients of the Ising Model.....**20** (1958), 192

Katti-P. K. (see Bhagat-S. M.) **12** (1954), 380

Kawabe-R. (see Umezawa-H.)............ ....**4** (1949), 367 (L); **4**, 368 (L); **4**, 369 (L); **4**, 420; **4**, 423; **4**, 443; **5** (1950), 153 (L); **5**, 266; **5**, 769

& **Umezawa-H.** The Self-Energy of a Dirac Particle and Its Relativistic Covariance..........**4** (1949), 370 (L), 461

(see Kamefuchi-S.)..**6** (1951), 891 (L)

——— (see Takasu-M.)....**9** (1953), 92 (L)

——— (see Goto-Shigeo).......**9** (1953), 312

Some Remarks on the Goldhaber Model for Strange Particles..**18** (1957), 96 (L)

——— (see Taguchi-Y.)...**19** (1958), 586 (L)

Kawaguchi-M. & **Mugibayashi-N.** Some Consequences of Gauge Invariance **8** (1952), 212

Kawaguchi-M. *(continued)*

(see Hayakawa-S. ......**11** (1951), 332 (L); **12** (1954), 355; Sup. **5** (1958), **41**

—— Kinematical Investigation of the *S*-Matrix....................**12** (1954), 758

—— & **Minami-S.** On the Relation between Meson-Nucleon Scattering and Photomeson Production.......**12** (1954), 789

—— & **Nishijima-K.** Note on the Decay Interactions of Hyperons and Heavy Meson (*cf.* Errata: Vol. 15, p. 419) ....**15** (1956), 180 (L)

—— & **Nishijima-K.** Note on the Decays of Σ Particles ...**15** (1956), 182 (L)

—— (see Iso-C.)...........**16** (1956), 177

—— (see Araki-H.) **17** (1957), 419

Kawaguchi-O., Kawai-M., Nishida-Y., Sano-M. & Ui-H. High Energy Nucleon Scattering by Nuclei......**12** (1954), 99 (L)

Kawai-M. (seee Kawaguchi-O.)........... ....**12** (1954), 99 (L)

—— (see Hayakawa-S.)....**13** (1955), 415

——, **Ui-H. & Nagasaki-M.** The Cloudy Crystal Ball Model for 14 MeV Neutron Reactions................**14** (1955), 263 (L)

——, **Nagasaki-M., Soga-M., Terasawa-T., Ui-H. & Wada-Y.** Cloudy Crystal Ball Model for Neutron Reactions at Higher Energies................**18** (1957), 66

—— & **Nagasaki-M.** Note on the Collision Matrix for the Nuclear Reactions. I.......................**19** (1958), 77

Kawakami-I. The Conservation Laws in the Lepton Process and Two Kinds of Neutrinos...................**19** (1958), 459

Kawamura-M. $E2+M1$ Mixed Transitions in Heavy Odd A Nuclei (*cf.* Errata: Vol. 18, p. 450)...........**18** (1957), 87 (L)

Kawarabayashi-K. Global Symmetry and the Branching Ratios for K^- Capture by the Nucleon..................**20** (1958), 117

—— (see Hara-Y.).....**20** (1958), 252 (L)

—— (see Igi-K.).......**20** (1958), 576 (L)

Kikuchi-K. (see Fujimoto-Y.)..**11** (1954), 264

—— (see Hayakawa-S.)..**11** (1954), 513; **12** (1954), 578; **13** (1955), 415; **16** (1956), 507

—— (see Nakasima-R.)......**14** (1955), 126; **15** (1956), 574; **17** (1957), 816 (L)

—— The Penetration of the Diffuse Nuclear Potential Barrier.....**17** (1957), 643

—— Deuteron Production by Nucleons bombarding Atomic Nuclei ...**18** (1957), 503

Kikuta-T. (see Ohmura-T.)

Kimura-T. (see Suura-H.)......**7** (1952), 171

—— & **Miyachi-Y.** On the Role of Longitudinal and Scalar Photons......... ....**7** (1952), 419 (L)

—— The Photon Self-Energy Problem and Microscopic Space-Time Structure... ....**10** (1953), 577 (L)

—— On the Quantum Field Theory of the Interaction between the Graviton and the Matter Field. I...........**16** (1956), 157

—— On the Quantum Field Theory of the Interaction between the Graviton and Matter Field. II——*Formulation without the Coordinate Condition*——... ....**16** (1956), 555

Kinase-W. On Interactions among Ions of a $BaTiO_3$ Crystal and on Its 180° and 90° Type Domain Boundaries.....**13** (1955), 529

Kinoshita-T. (see Endo-S.) .... **3** (1948), 320 (L); **4** (1949), 100 (L); **4**, 218

—— & **Nambu-Y.** On the Electromagnetic Properties of Mesons..**5** (1950), 307 (L)

—— A Note on the *C*-Meson Hypothesis ....**5** (1950), 335 (L)

—— On the Interaction of Mesons with the Electromagnetic Field. I...**5** (1950), 473

—— & **Nambu-Y.** On the Interaction of Mesons with the Electromagnetic Filed. II............................**5** (1950), 749

—— (see Fukuda-H.).......**5** (1950), 1024

—— Note on the Infrared Catastrophe (*cf.* Errata: Vol. 6, p. 134).............. ....**5** (1950), 1045 (L)

—— (see Aidzu-K.) ....**6** (1951), 630 (L)

Kishimoto-T. (see Takayanagi-K.)........ ....**9** (1953), 578

Kita-H. & Hasegawa-H. A Preliminary Treatment of Nucleon Cascade........... ....**4** (1949), 371 (L)

—— (see Hasegawa-H.)..**4** (1949), 376 (L)

—— Reaction of Meson Field on Nucleon ....**4** (1949), 566 (L)

—— Relativistic Two-Body Problem **7** (1952), 217

—— On the Solution of the Equation of Motion..................**10** (1953), 231 (L)

—— Remarks on Heisenberg's Non-Linear Field Theory......**15** (1956), 83 (L)

Kita-H. *(continued)*

—— & **Wakano-M.** On the Bethe-Salpeter Equation and the Excited States of the Hydrogen Atom........**17** (1957), 63

—— An Attempt of Nonlinear Field Theory..................**19** (1958), 454 (L)

Kita-I. & **Minakawa-O.** Cloud Chamber Study of Nuclear Interactions in Lead and Carbon of Secondaries emitted in Cosmic Ray penetrating Showers..**10** (1953), 237 (L)

Kitamura-T. & **Oda-M.** On the Nuclear Interaction of μ-Meson below Ground.... ....**16** (1956), 252 (L)

—— (see Fukui-S.).....**19** (1958), 348 (L)

Kitamura-Y. & **Minakawa-O.** The Absolute Intensity of Cosmic Rays at Geomagnetic Latitude 25°N............. ....**10** (1953), 239 (L)

Kitano-Y. & **Nakano-H.** On a Correlation between the Electron Assembly and the Lattice Waves in the Crystal...**9** (1953), 370

Kitao-K. (see Hayakawa-S.)............. ....**16** (1957), 131; **16,** 139

—— see Terashima-Y. ....**17** (1957), 814 (L)

Klein-A. Scattering Matrix in the Heisenberg Representation for a System with Bound States................**14** (1955), 580

—— On the Concept of Potential in Quantum Field Theory.......**20** (1958), 257

—— & **McCormick-B. H.** Derivation of the Two Nucleon Potential..**20** (1958), 876

Klemens-P. G. On the Theory of Thermal Conductivity of Pure Metals at Low Temperatures ....**16** (1956), 154 (L)

Knipp-J. K., Eguchi-T., Ohta-M., & **Nagata-S.** Ionization of Gas by Electrons **10** (1953), 24

Koba-Z., Tati-T. & **Tomonaga-S.** On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields. II, III ——*Case of Interacting Electromagnetic and Electron Fields*—— **2** (1947), 101, 198

—— (see Ito-D.) .... **2** (1947), 216 (L); **2,** 217 (L); **3** (1948), 276; **3,** 325

—— & **Tomonaga-S.** Application of the "Self-Consistent" Subtraction Method to the Electric Scattering of an Electron ... .**2** (1947), 218 (L)

—— & **Takeda-G.** Radiation Corrections for Compton Scattering ....**3** (1948), 98 (L)

——, **Oisi-Y.** & **Sasaki-M.** Auxiliary Condision and Gauge Transformation in the "Super-Many-Time Theory". I, II.... ....**3** (1948), 141, 229

—— & **Takeda-G.** Radiative Corrections in e^2 for an Arbitrary Process involving Electrons, Positrons, and Light Quanta .. ..**3** (1948), 203 (L)

—— Infrared Catastrophe and Field Reaction in General Processes of Quantum Electrodynamics..........**3** (1948), 208 (A)

——, **Ito-D.** & **Tomonaga-S.** Corrections due to Reactions of "Cohesive Force Field" to Elastic Scattering of an Electron ....**3** (1948), 211 (A)

—— & **Tomonaga-S.** On Radiation Reactions in Collision Processes. I ——*Application of the "Self-Consistent" Substraction Method to the Elastic Scattering of an Electron*—— **3** (1948), 290

—— (see Endo-S.)................... **3** (1948), 320 (L); **4** (1949), 100 (L); **4,** 218

—— & **Takeda-G.** On Radiation Reaction in Collision Processes. II——*Radiative Corretions for Compton Scattering* ——........................**3** (1948), 407

—— & **Takeda-G.** On Radiation Reaction Collision Processes. III_1, III_2 ——*First Radiative Correction for an Arbitary Process including Electrons, Positrons and Light Quanta*——.....**4** (1949), 60, 130

—— Semi-Classical Derivation of the Anomalous Magnetic Moment of the Electron..................**4** (1949), 98 (L)

——, **Nambu-Y.** & **Tani-S.** Effect of the *C*-Meson Field on the Anomalous Magnetic Moment of the Electron (*cf.* Errata: Vol. 4, p. 242).....**4** (1949), 99 (L)

—— (see Kanesawa-S.)......**4** (1949), 297

—— Semi-Classical Treatment of the Reactive Corrections. I——*The Anomalous Magnetic Moment of the Electron*—— **4** (1949), 319

—— External Vacuum Polarization ....**4** (1949), 382 (L)

——, **Kotani-T.** & **Nakai-S.** Meson Production by *X*-Ray (*cf.* Errata: Vol. 5, p. 494 L)..................**5** (1950) 137 (L)

—— On the Integrability Condition of Tomonaga-Schwinger Equation ....**5** (1950), 139 (L)

Koba-Z. *(continued)*

———, **Kotani-T.** & **Nakai-S.** Meson Production by X-Ray (*Errata for* Vol. 5, p. 137)....................**5** (1950), 494 (L)

——— Note on a Lorentz-Invariant Integration in the Quantum Field Theory **5** (1950), 696

———, **Mugibayashi-N.** & **Nakai-S.** On Gauge Invariance and Equivalence Theorems.................... **6** (1951), 322

———, **Kotani-T.** & **Nakai-S.** Production of Charged π-Meson by γ-Ray —— *Higher Order Corrections*——.......... .... **6** (1951), 849

Variation Principle in Relativistic Hydrodynamics.......... **14** (1955), 488 (L)

——— Interaction of π-Mesons with π-Mesons................ **15** (1956), 294 (L)

—— Remarks on the Pion-Pion Interaction.........................**15** (1956), 461

——— Note on Models of Multiple Meson Production at Extremely High Energy... .... **17** (1957), 288

——— & **Takeda-G.** Antinucleon-Nucleon Interactions..................**19** (1958), 269

——— Antinucleon Annihilation and Multiplicity of Emitted Pions..**19** (1958), 594 (L)

Hypothetical Velocity Measurements of a Dirac Particle ..Sup. **8** (1958), 1

Kobayakawa-K. (see Kakudo-Y.)......... .... **17** (1957), 823 (L)

——— (see Yajima-N.)....... **19** (1958), 192

Kobayashi-T. (see Fukuda-N.) .... **8** (1952), 261 (L)

, **Osada-J.** & **Tani-S.** On the Effective Coupling Strength in the Static Pion Theory...............**18** (1957), 89 (L)

—— (see Ito-D.)........... **18** (1957), 264

——— Pion Production in Nucleon-Nucleon Collisions in BeV Range....**18** (1957), 318 (L)

Kobayasi-M. & **Kanai-E.** On the Electromagnetic Properties of Nucleons. I **1** (1946), 21

& **Imaeda-K.** A Note on the Method of Radiation Damping and Its Application to the Photomesonic Process **1** (1946), 102

——— (see Kanai-E.).. **2** (1947), 151: **2,** 179

——— (see Goto-Shigeo)... **3** (1948), 449 (L)

(see Sawada-K.)......... **4** (1949), 71

(see Ikeda-Kiyomi).... **20** (1958), 960

(see Yukawa-H.) ....Sup. **1** (1955), 46

—— On the Meson Thery of the Penetrating Component of Cosmic Radiation................Sup. **1** (1955), 137

Kodaira-K. & **Kato-T.** On the Admissible Wave Functions...........**3** (1948), 439 (L)

Kodama-T. (see Furuichi-S.) ....**16** (1956), 64 (L); **17** (1957), 89

Koh-Y., **Miyatake-O.** & **Watanabe-Y.** Angular Correlation of Internal Bremsstrahlung and Successive Nuclear Gamma-Ray in the Radiative K-Capture......... .... **18** (1957), 663 (L)

Koide-S. & **Usui-T.** The Effect of Helium 3 Ingredient on the Wave Propagation in Liquid Helium II.............. **6** (1951), 506

——— & **Usui-T.** The Effect of He^3 Ingredient on the Thermal Rayleigh Disc Torque................... **6** (1951), 622 (L

—— (see Taketani-M.).. **6** (1951), 635 (L)

(see Kambe-K.).......... **7** (1952), 15

(see Kanazawa-H.)......**9** (1953), 288

Kokaji-S. (see Kanai-E.)........ **2** (1947), 151

Komatsuzawa-A., **Munakata-Y.** & **Hasegawa-H.** Double Meson Production in the Intermediate-Coupling Theory. I **14** (1955), 65

, **Sugano-R.** & **Nogami-Y.** Coupling Constant of Kaon-Baryon Interaction. I, II............. **20** (1958), 246 (L), 249(L)

Komatu-K. On the Magnetic Structure of Manganese Antimonide....**10** (1953), 579 (L)

Komoda-T. & **Sasaki-M.** Magnetic Moment of Li^6.................... **8** (1952), 669 (L)

——— & **Sasaki-M.** On the Proton-Neutron Interaction.......**9** (1953), 468 (L)

—— First Excited State in Ca^{42} and Ca^{44} .... **20** (1958), 580 (L)

Komori-H., **Miyanaga-K.** & **Ogawa-S.** The Burst Production by the μ-Meson... .... **7** (1952), 122 (L)

The Transition Effect of the Star Production................ **8** (1952), 134 (L)

——— The Energy Balance of Cosmic Rays....................... **13** (1955), 205

—— (see Hirokawa-S.)..**14** (1955), 494 (L)

Kondo-J. Band Theory of Superexchange Interaction..................**18** (1957), 541

Kondoh-A., **Nakajima-S.** & **Shimizu-M.** Pressure Effect on the Second Sound Velocity in Liquid Helium II...**6** (1951), 939

Kondoh-A. *(continued)*

——— Interaction between Spin Waves and Conduction Electrons.. **10** (1953), 117 (L)

Konisi-G. & **Ogimoto-T.** Quantum Theory in Pseudo-Hilbert Space...... **20** (1958), 868

Konuma-M. (see Umezawa-H.) .... **15** (1956), 417 (L)

— The Range of the Interaction between Different Fermions...**16** (1956), 259

———, **Miyazawa-H.** & **Otsuki-S.** Two-Poin-Exchange Nuclear Potential **19** (1958), 17

Koshiba-M. (see Fukuda-H.)....**6** (1951), 788

Koshino-S. On the Electron-Lattice Interaction in Non-Polar Semiconductors....... .... **18** (1957), 23

Kotani-M. (see Nakamura-Takashi)....... .... **8** (1952), 387

Kotani-T. (see Koba-Z.) ....**5** (1950), 137 (L); **5**, 494; **6** (1951), 849

———, **Machida-S.**, **Nakamura-S.**, **Takebe-H**, **Umezawa-M.** & **Yoshimura-T.** On the Mesonic Correction to the β-Decay......................**6** (1951), 1007

———, **Takebe-H.**, **Umezawa-M.** & **Yamaguchi-Y.** Notes on the Decay of the Neutron. I, II.... **7** (1952), 469; **8** (1952), 120

——— On the Extension of the Casimir Trick. I——*On the Definition of Density Matrix and Its Reduction*——.. **14** (1955),379

——— & **Ross-M.** The First Forbidden β-Decay...................... **20** (1958), 643

Kothari-D. S. (see Auluck-F. C.)......... .... **11** (1954), 120 (L)

& **Auluck-F. C.** Effect of Radiation on the Self-Energy of an Electron... .... **13** (1955), 100 (L)

Kraushaar-W.L. The Magnetic Field in the Vicinity of the Solar System .... **14** (1955), 77 (L)

High Latitude Impact Zones for Solar Cosmic Rays......... **14** (1955), 78 (L)

Kroll-W. On the Determination of the Elastic Spectra of Solids from Specific Heat Data.............................. **8** (1952), 457

Kubo-R. & **Toyozawa-Y.** The Method of Generating Function applied to Radiative and Non-Radiative Transition of a Trapped Electron in a Crystal .... **12** (1954), 805 (L)

— & **Toyozawa-Y.** Application of the Method of Generating Function to Radiative and Non-Radiative Transitions of a Trapped Electron in a Crystal...... ....**13** (1955), 160

Kubozoe-T. (see Kaneko-S.) .... **13** (1955), 461 (L)

Kundu-S. K. Meson Production in Meson-Nucleon Interaction.......... **20** (1958), 939

Kunimune-M. The Mutual Repulsive Potential between Argon Atoms........ ....**5** (1950), 412

Kuroboshi-E. & **Hara-Y.** On the Exchange Magnetic Moments............**20** (1958), 163

——— (see Fujita-J.).........**20** (1958), 308

Levinger-J. S. (see Rustgi-M. L.)........ ....**18** (1957), 100 (L)

Machida-S. (see Taketani-M.)....**5** (1950), 150 (L); **6** (1951), 559; **6**, 638 (L); **7** (1952), 45

——— & **Tamura-T.** On the Photo-Meson Production from Heavy Nuclei........... .... **6** (1951), 437 (L)

——— & **Tamura-T.** Photo-Meson Prodction from Deuteron............ **6** (1951), 572

, **Ohnuma-S.** & **Taketani-M.** On the Fourth-Order Nuclear Potential...... .... **6** (1951), 904 (L)

——— (see Kotani-T.)........**6** (1951), 1007

——— & **Tamura-T.** On the *Z*-Dependence of the Positive-Negative Ratio of the Mesons produced by Photons on Nuclei .. .. **6** (1951), 1030 (L)

——— & **Nishijima-K.** Remarks on the Adiabatic Nuclear Potential.....**7** (1952), 57

——— On the *D* State Probability of Deuteron................. **9** (1953), 683 (L)

(see Hiida-K.) ....**13** (1955), 219 (L); **15** (1956), 189

——— & **Senba-K.** On Higher Order Corrections in the Meson Theory of Nuclear Forces........................ **13** (1955), 389

——— An Exactly Soluble Example in Quantum Field Theory...**14** (1955), 407 (L)

——— (see Inoue-Kazuhiko)..**15** (1956), 122

——— Pion-Nucleon Scattering and the Structure of the Pion........**18** (1957), 467

——— (see Goto-Shigeo)......**20** (1958), 216

Machida-S. (*continued*)

——— (see Iwadare-J.)....Sup. **3** (1956), 13

——— & **Toyoda-T.** Constructions of Nuclear Potential from Pion Theory .... Sup. **3** (1956), 106

Mahanty-J., Maradudin-A. A. & **Weiss-G. H.** Vibrational Theormodynamic Properties of Lattices with Defects. I——*The Linear Lattice*——......**20** (1958). 369

Majumdar-R. C., Apte-A. S. & **Sundaresan-M. K.** The Scattering of Mesons by Nuclear Particles. I **6** (1951), 737

———, **Gupta-S.** & **Trehan-S. K.** The Classical Equations of Motion of a Point Particle in a Charged Symmetric Meson Field (*cf.* Errata: Vol. 12. p. 697)................................... **12** (1954), 31

& **Mitra-A. N.** The Effect of Damping on Radiative Corrections to Electron Scattering and the Problem of Infrared Catastrophe..........**8** (1952), 479

, **Pandya-S. P.** & **Gupta-S.** The Equation of Motion of a Spinning Particle in a Meson Field.........**8** (1952). 670 (L)

Majumdar-S. D. Note on Energy Levels of Polyatomic Molecules..**19** (1958), 452 (L)

——— The Clebsch-Gordan Coefficients... .... **20** (1958), 798

Maki-Z. (see Fukuda-N.)..**8** (1952), 261 (L)

———, **Sato-M.** & **Tomonaga-S.** Scattering Problem in the Intermediate-Coupling Theory. I..**9** (1953), 607; Sup. **2** (1955), 193

——— & **Sato-M.** A Remark on the Strong Coupling Approximation in Meson-Nucleon Scattering....................**10** (1953), 386

On the Use of Feynman Amplitudes in the Quantum Field Theory **15** (1956), 237

On a Theory of the Composite Model of Elementary Particles **16** (1956), 667

Mannari-I. (see Tomita-K.) ....**10** (1953), 367 (L)

——— (see Terasaki-F.)..**18** (1957), 552 (L)

——— Remarks on Spin-Wave Theory for the Ferromagnetic Exchange Problem.. ....**19** (1958), 201

——— Quantization of Spin Wave Field .... **19** (1958), 451 (L)

Mano-K. (see Hayakawa-S.)................................**5** (1950), 495 (L); **5**, 844

The Self-Energy of the Scalar Nucleon......................**14** (1955). 435

Maradudin-A. A (see Mahanty-J.) .... **20** (1958). 369

March-N. H. (see Donovan-B.) .... **17**, (1957), 813 (L)

Marshak-R. E. (see Ashkin-J.)..**5** (1950), 634

Marumori-T. On the "Optical Method" for the Scattering of High Energy Particles by Complex Nuclei........**9** (1953), 321 (L)

——— (see Hara-O.)....................................**9** (1953), 559 (L); **10** (1953), 114 (L); **10**, 470 (L); **12** (1954), 177

(see Ogawa-S.)........**10** (1953), 265

———, **Yukawa-J.** & **Tanaka-R.** On the Foundation of the Unified Nuclear Model. I............................**13** (1955). 442

——— & **Yamada-E.** On the Foundation of the Unified Nuclear Model. II .... **13** (1955), 557 (L)

——— On the Relation between Hill-Wheeler's and Bohr-Mottelson's Descriptions of the Nuclear Collective Model.... .... **14** (1955), 608 (L)

, **Suekane-S.** & **Yamamoto-A.** Surface Rigidity and Shell Structure of Nuclei ....**15** (1956). 582 (L)

, **Suekane-S.** & **Yamamoto-A.** Nuclear Quadrupole Moment and Rigidity of Nuclear Core..........**15** (1956), 584 (L)

, **Suekane-S.** & **Yamamoto-A.** Nuclear Deformability and Shell Structure .... **16** (1956). 320

(See Hayakawa-S.) **17** (1957) 43; **18** (1957), 396

(see Nagata-Sinobu.)...**19** (1958), 495

——— (see Ikeda-Kiyomi)....**20** (1958), 960

Mase-S. (see Ariyama-K.) .... **12** (1954). 244 (L); **12**, 216 (L

Matano-T. (see Miura-I.)..**13** (1955), 115 (L)

Mathews-P. M. (see Ramakrishnan-A.) .. .. **9** (1953), 679 (L); **11** (1954), 95

Matsubara-T. Quantum-Statistical Theory of Liquid Helium.............**6** (1951), 714

The Quantum Mechanics of Assemblies of Interacing Particles...... ....**6** (1951), 899 (L)

——— Quantum-Statistical Mechanics of Electron-Phonon System..**13** (1955), 628 (L)

——— A General Theory of Meissner Effect ....**13** (1955), 631 (L)

Matsubara-T. (*continued*)

A New Approach to Quantum-Statistical Mechanics **14** (1955), 351

& **Matsuda-H.** A Lattice Model of Liquid Helium ....**16** (1956), 416 (L)

———, **Morita-A.** & **Honda-N.** Theory of Bose-Einstein Condensation of an Imperfect Bose-Einstein Gas **16** (1956), 447

& **Matsuda-H.** A Lattice Model of Liquid Helium. I **16** (1956), 569

(see Matsuda-H.) **17** (1957), 19

(see Murao-T.)........**18** (1957), 215

(see Blatt-J. M.) .... **20** (1958), 553; **20,** 781 (L)

Matsuda-H. The Asymptotic Expression for the Structure Function of Interacting Particles..................**8** (1952), 136 (L)

Generalization of Feynman's Theory of Energy Levels of Liquid Helium............................... **12** (1954), 537

——— (see Yamamoto-Tsunenobu) **16** (1956), 269

——— (see Matsubara-T.)............................... **16** (1956), 416 (L); **16,** 569

——— & **Matsubara-T.** A Lattice Model of Liquid Helium. II.......... **17** (1957), 19

——— A Lattice Model of Liquid Helium. III ——*Equilibrium Properties of Liquid He^4 and Mixtures of He^4 and He^3*—— **18** (1957), 357

Matsumoto-M. & **Watari-W.** Nucleon Scattering by a Potential..........**11** (1954), 63

——— & **Watari-W.** On Nuclear Force for $^3S_1+^3D_1$ State...........**12** (1954), 503

——— Formula for Differential Cross Section in Nucleon-Nucleon Scattering .... **13** (1955), 329 (L)

Matsumoto-T. & **Sugawara-M.** On the Origin of Primary Cosmic Radiation **9** (1953), 1

———, **Hamada-T.** & **Sugawara-M.** On the Effects of Excited States of Nucleons upon Static Nuclear Potential in Symmetrical Pseudoscalar Meson Theory. I ——*Derivation of Nuclear Potential and Qualitative Conclusions*—— ..**10** (1954), 199

——— & **Sugawara-M.** On the Effects of Excited States of Nucleons upon Static Nuclear Potential in Symmetrical Pseudoscalar Meson Theory. II ——*Numerical Results on Deuteron Problem*——................................. **12** (1954), 553

Matsunobu-H. & **Takebe-H.** Tables of U Coefficients **14** (1955), 589

— & **Yoshida-S.** Single Particle Transition in Neutron Inelastic Scattering by Deformed Nuclei..........**19** (1958), 599

Matsuyama-S. & **Miyazawa-H.** An Interpretation of the Meso-Disintegration of the Deuteron in terms of the Strong Coupling Meson Theory........**8** (1952), 140 (L)

——— (see Miyazawa-H.)..**8** (1952), 573 (L)

& **Miyazawa-H.** Meson-Deuteron Reaction and Nucleon Isobars.. **9** (1953), 492

——— (see Hasegawa-K.)..**12** (1954), 548 (L)

& **Miyazawa-H.** Dispersion Relations in Nucleon-Nucleon Scattering................**18** (1957), 328 (L); **19** (1958), 517 (*cf.* Errata: Vol. 20, p. 983)

Matsuzaki-Y. & **Sasaki-M.** The Capture Process of π-Mesons by Deuterons **7** (1952), 573

Matumoto-K. Some Consequences of the Compound Hypothesis for Elementary Particles **16** (1956), 583

, **Otsuki-S.,** **Shimodaira-H.** & **Yamada-E.** On Puppi's Determination of the Pion-Nucleon Coupling Constant...............................**19** (1958), 216 (L)

Matumoto-Z. & **Yamada-M.** Formulas in the Fermi Theory of Beta-Decay. I——*Beta-Spectrum*—— **19** (1958), 285

- (see Fujita-J.)..**20** (1958), 287; **20** 308

May-R.M. & **Schafroth-M.R.** Long-Range Spin Interaction and the Meissner-Ochsenfeld Effect **19** (1958), 646

McCormick-B.H. (see Klein-A.).. **20** (1958), 876

McConnell-J. Vacuum Polarisation by Spin One Particles..............**7** (1952), 421 (L)

Miida-J. (see Watanabe-M.) ....**5** (1950), 162 (L)

Mikoshiba-N. Quantum Hydrodynamics for a Charged Non-Viscous Fluid .... **13** (1955), 627 (L)

Mikura-Z. On the Bose-Einstein Liquid Model for Liquid Helium. I ——*He^3-He^4 Mixtures*—— **11** (1954), 25

- On the Bose-Einstein Liquid Model for Liquid Helium. II——*Properties under High Pressures*——..........**11** (1954), 207

Mikura-Z. (*continued*)
——— On the Bose-Einstein Liquid Model for Liquid Helium. III —— *Further Considerations regarding Vapour Pressures of He^3-He^4 Mixtures*——. **11** (1954), 244
——— Further Considerations regarding Liquid Helium II at High Pressures .... **11** (1954), 503 (L)
——— On the Thermal Rayleigh Disk in Liquid Helium containing He^3............................... **11** (1954), 504 (L)
Some Comments on the Specific Heat of Liquid He^3 ...... **13** (1955), 120 (L)
——— On the Specific Heat of a Solution of He^3 in Liquid He^4..... **13** (1955), 122 (L)
On the Bose-Einstein Liquid Model for Liquid Helium. IV ——*A Revised Medel*—— (*cf.* Errata: Vol. 15, p. 187).. .... **14** (1955), 337
Mimura-Y. (see Suura-H.)...... **7** (1952), 171
Minakawa-O. (see Kita-I.).. **10** (1953) 237 (L)
——— (see Kitamura-Y.).. **10** (1953), 239 (L)
Minami-Sakae (see Sugawara-M.) **7** (1952), 563
Minami-Shigeo π^0-Meson Production by Gamma-Ray .... **6** (1951), 895 (L)
Neutral-Meson Production by Gamma-Ray (*cf.* Errata: Vol. 7, p. 267)...... .... **7** (1952), 69
——— Excitation Function for Meson Production by γ-Ray **7** (1952), 535
———, **Nakano-T., Nishijima-K., Okonogi-H.** & **Yamada-E.** Pion Reactions in One Nucleon System and Nucleon Isobars...................... **8** (1952), 531
The Scattering of Gamma-Ray by Nucleon and Nucleon Isobars .. **9** (1953), 108
Note on Meson-Nucleon Interaction (*cf.* Errata: Vol. 11, p. 230) .... **11** (1954), 123 (L)
An Invariance Theorem for Cross Sections of Meson-Nucleon Scattering.... .... **11** (1954), 213
(see Hayakawa-S.) ..... **11** (1954), 332 (L); **12** (1954), 355; Sup. **5** (1958), 41
(see Kawaguchi-M.) .. **12** (1954), 789
(see Ito-D.)...................... **13** (1955), 108 (L); **14** (1955), 198; **14,** 482; **14,** 487 (L); **16** (1956), 548; **18** (1957), 264
——— Meson Reactions in Two-Nucleon System...................... **15** (1956), 12
Interaction of K^+-Meson and Nucleon.................. **16** (1956), 66 (L)
K-π Interactions and K^+-N Scattering .... **17** (1957), 508 (L)
& **Yamaguchi-Y.** The Photon-Nucleon Scattering **17** (1957), 651
& **Yamaguchi-Y.** Parity Nonconservation and Decay of Hyperon......... .... **18** (1957), 39
Misawa-S. (see Morita-T.)................ .... **18** (1957), 326 (L)
Mitani-S. (see Watase-Y.) .... **18** (1957), 314 (L)
Mito-I. & **Ezawa-H.** Ionization Loss Near the Origin of an Electron Pair of Very High Energy **18** (1957), 437
Mitra-A.N. (see Majumdar-R. C.) **8** (1952), 479
Miura-I. (see Kameda-T.).. **5** (1950), 323 (L)
& **Kameda-T.** On the Second Maximum of the Rossi Transition Curve. II.. .... **5** (1950), 325 (L)
, **Matano-T., Toyoda-Y.** & **Murayama-T.** On the Penetrating Showers produced in Paraffin and Graphite .... **13** (1955), 115 (L)
Miura-S. (see Ogawa-S.).... **5** (1950), 897 (L)
& **Ogawa-S.** On the Star Production by Cosmic-Ray Underground........ .... **6** (1951), 251 (L)
Miyachi-S. The Coupling Constants of Strong Interactions ...... **17** (1957), 515 (L)
Miyachi-Y. (see Kimura-T.)............. .... **7** (1952), 419 (L)
——— On the Pion-Nucleon Scattering .. .. **9** (1953), 469 (L)
Meson Production in Meson-Nuclear Collisions .... **12** (1954), 243 (L)
(see Ikeda-M.) **16** (1956), 537
On the Decay Interactions of Strange Particles **19** (1958), 112
Miyahara-S. On the Theory of Ferromagnetism at 0°K.................. **2** (1947), 25
(see Yosida-K.).......... **3** (1948), 74
Pri la Teorio de Kolektivaj Elektronoj de Feromagentismo...... **4** (1949), 142
——— A Commentary to Yosida's Theory on FeS$_n$................ **6** (1951), 1026 (L)
Miyake-S. An Analysis of Experimental Data on Extensive Air Showers **20** (1958), 844
Miyamoto-Y. (see Hayakawa-S.)..........

Miyamoto-Y. (*continued*)
........**2** (1947), 95 (A); **3** (1948), 209 (A)
On the Interaction of the Meson and Nucleon Field in the Super-Many-Time Theory..................**3** (1948), 124
(see Fukuda-H.).....**4** (1949), 47; **4,** 121; **4,** 235 (L); **4,** 347; **4,** 385 (L); **4,** 388 (L); **4,** 389 (L); **4,** 391 (L); **4,** 392 (L); **4,** 477; **5** (1950), 147 (L); **5,** 148 (L); **5,** 283; **5,** 352
(see Ito-D.) **13** (1955), 594

Miyanaga-K. (see Komori-H.) ....**7** (1952), 122 (L)

Miyatake-O. On the Structure of Heavy Nuclei **7** (1952), 285
(see Koh-Y.)......**18** (1957), 663 (L)

Miyatake-Y. On Some Notes on the So-called G. Feldman's Modified Propagator .... **12** (1954), 551 (L)
The Relation between Jordan's Non-Localized Theory and Pais-Uhlenbeck's Theory..................**13** (1955), 458 (L)
Perturbational Calculations of Propagators of the Elementary Particles interacting with the Gravitational Field.. ....**20** (1958), 476

Miyazawa-H. (see Fujimoto-Y.)......... .... **5** (1950), 1052 (L)
A Possible Explanation for the Deviations of Nuclear Magnetic Moments from the Schmidt Lines.................. ....**6** (1951), 263 (L)
—— A Model for *V*-Particles.......... ....**6** (1951), 631 (L)
Deviations of Nuclear Magnetic Moments from the Schmidt Lines........ .... **6** (1951), 801
Non-Additivity of Nucleon Magnetic Moment in the Deuteron..**7** (1952), 207
(see Matsuyama-S.)..**8** (1952), 140 (L); **9** (1953), 492; **18** (1957), 328 (L); **19** (1958), 517
——— & **Matsuyama-S.** π-D Scattering and Strong Coupling Theory (*cf.* Errata: Vol. 8, p. 677)...........**8** (1952), 573 (L)
(see Fujita-J.)......................... **17** (1957), 360; **17,** 366; **20** (1958), 308
——— (see Ando-F.).....**17** (1957), 607 (L)
—— (see Konuma-M.) **19** (1958), 17

Miyazima-T. On the Interaction of Elementary Particles. II..........**2** (1947), 94 (A)
, **Tati-T.** & **Tomonaga-S.** On Wentzel's Method in the Meson Theory.. .... **3** (1948), 26
On the Temperature Effect of Underground Cosmic Radiation .... **3** (1948), 99 (L); Sup. **1** (1955), 212
Effect of Radiation Field on the Meson Decay (*cf.* Errata: Vol. 3, p. 323) ....**3** (1948), 212 (A)
The Self-Consistent Subtraction Method and Heitler's Integral Equation.. ....**3** (1948), 455 (L)
(see Ito-D.) .... **4** (1949), 380 (L); **4,** 492
(see Fukuda-H.)................................... **4** (1949), 385 (L); **4,** 477
, **Sasaki-M.,** **Suzuki-R.** & **Fukuda-N.** The Covariant Formalism of the Theory of Damping....**5** (1950), 152 (L)
(see Baba-K.)......**5** (1950), 159 (L)
(see Nakano-T.) .... **5** (1950), 338 (L); **5,** 1014
(see Hanawa-S.) **5** (1950), 459; **7** (1952), 391
—— (see Hayakawa-S.).................................. **5** (1950), 495 (L); **5,** 844
Remarks on the Field Theory.... .... **5** (1950), 735
(see Fukuda-N.)........**5** (1950), 849
(see Takahashi-Yasushi) .... **6** (1951), 431 (L)
& **Tamura-T.** A Collective Discription of the Surface Oscillation of Atomic Nuclei ——*Extention of Tomonaga's Method to Three Dimensional Nucleus*——..................**15** (1956), 255
On the Mesotron of Spin One-Half ....Sup. **1** (1955), 161
——— & **Tomonaga-S.** Zur Theorie des Mesotrons. II..............Sup. **2** (1955), 21
& **Tomonaga-S.** On the Mesotron Theory of Nuclear Forces..Sup. **2** (1955), 82
——, **Tati-T.** & **Tomonaga-S.** On Wentzel's Method in the Methon Theory ....Sup. **2** (1955), 181

Mizuno-Y. & **Izuyama-T.** Remarks on Mayer's Reduced Density Matrix Method **18** (1957), 33
(see Shimizu-Mikio)..**20** (1958), 777 (L)

Mori-H. & **Ono-S.** The Quantum-Statistical Theory of Transport Phenomena. I——*On the Boltzmann-Uehling-Uhlenbeck Equation*—— **8** (1952), 327

—— The Statistical Mechanics of Time-Dependent Phenomena ....**9** (1953), 470 (L)

—— The Quantum-Statistical Theory of Transport Phenomena. II ——*On the Theory of Metallic Conductivity*—— **9** (1953), 473

Mori-Y. (see Araki-G. ....**5** (1950), 505 (L); **6** (1951), 188

Morita-A. The Conduction Electron with Low Energy in Ionic Crystals ....**5** (1950), 329 (L)

—— (see Katsura-S.)... **5** (1950), 330 (L)

—— Some Generalization of the Theory of Scattering with Application to Slow Electrons in Polar Crystals .... **11** (1954), 609 (L)

—— (see Matsubara-T.)....**16** (1956), 447

—— & **Takahashi-K.** Theory of Cohesive Energy of LiH Crystal ——*The Method of Semi-Localized Crystalline Orbital* (*SLCO*). I ——......**19** (1958), 257

—— Theory of Cohesive Energies and Energy-Band Structures of Diamond-Type Valence Crystals ——*The Method of SLCO*. II——................**19** (1958), 534

Morita-M. (see Yamada-M.) **8** (1952), 431

—— & **Yamada-M.** On the β-γ Angular Correlation of Sb^{121} ....**8** (1952), 449; **10** (1953), 111 (L)

—— On the Electron-Neutrino Angular Correlation....................**9** (1953), 345

—— Interference Terms of Beta-Ray Angular Correlations ....**10** (1953), 363 (L)

—— Note on Coexistence of Tensor and Axialvector Interactions in Beta-Decay .. .. **10** (1953), 364 (L)

——, **Fujita-J.** & **Yamada-M.** β-Spectra of Fe^{59}, Rb^{87}, Tc^{99}, Cs^{137} and the Coupling Constants of Scalar and Tensor Interactions in β-Decay (*cf.* Errata; Vol. 13, p. 224).......................**10** (1953), 630

—— & **Yamada-M.** On the β-γ Angular Correlation of Sb^{124}. II........**10** (1953), 641

—— (see Fujita-J.) **11** (1954), 219

—— & **Tamura-T.** On the Binding Energy and Properties of Lower Energy Levels of Li^6 (*cf.* Errata: Vol. 13, p. 225) **12** (1954), 653

——, **Sugie-A.** & **Yoshida-S.** Note on the Angular Distribution of Photo-Reaction (*cf.* Errata; Vol. 13, p. 225)........ .... **12** (1954), 713

—— & **Yamada-M.** Beta-Alpha Angular Correlation of Li^8........**13** (1955), 114 (L) *cf.* Errata: Vol. 13. p. 225

—— (see Kato-Y.) **13** (1955), 276

—— (see Saito-R.) **13** (1955), 540

—— Explicit Formulae of Beta-Gamma Directional Correlation **14** (1955), 27

—— (see Ohmura-T. **15** (1956), 222; **17** (1957), 326

—— Proposal for Experiments for Determination of Beta-Decay Interaction and Theory of Triple Cascade Transition **15** (1956), 445

Morita-T., Abe-R. & **Misawa-S.** Ferromagnetism of a Gas of Hard Sphere Fermions with Spin 1/2..**18** (1957), 326 (L)

—— On the Lattice Model of Liquid Helium proposed by Matsubara and Matsuda **18** (1957), 462

—— Bose-Einstein Lattice Gases equivalent to the Heisenberg Model of Ferro-, Antiferro- and Ferrimagnetism.......... ....**20** (1958), 614

—— Bose-Einstein Lattice Gas Theory of Ferromagnetism **20** (1958), 728

—— Theory of Classical Fluids: Hyper-Netted Chain Approximation. I——*Formulation for a One-Component System*——.. ....**20** (1958), 920

Moriya-T. & **Yosida-K.** On the Origin of the Anisotropy Energy of $CuCl_2 \cdot 2H_2O$.. .... **9** (1953) 663

—— Nuclear Magnetic Relaxation in Antiferromagnetics. I, II..**16** (1956), 23, 641

—— & **Motizuki-K.** Nuclear Magnetic Relaxation in Solid Hydrogen............ .... **18** (1957), 183

—— Nuclear Magnetic Relaxation in Liquid Hydrogen **18** (1957), 567

Motizuki-K. (see Moriya-T.) ..**18** (1957), 183

Mugibayashi-N. (see Koba-Z.)..**6** (1951), 322

—— (see Kawaguchi-M) **8** (1952), 212

—— & **Namiki-M.** Perturbation Theory of Relativistic Eigenvalue Problem ....**10** (1953), 108 (L)

—— (see Namiki-M.)..**10** (1953), 474 (L)

—— An Example of One-Dimensional Oscillatory Motion in Magnetohydrodynamics ....20 (1958), 241 (L)

Munakata-Y. (see Hayashi-C.)..7 (1952), 481

Some Remarks on Lee's Model in Renormalizable Field Theory .... **13** (1955), 455 (L)

(see Komatsuzawa-A.)..**14** (1955), 65

- (see Sugano-R.) ..**16** (1956), 532 (L)

(see Araki-H.)........**17** (1957), 419

Murai-T. Electronic States of Ethylene Molecule......................**7** (1952), 345

—— & **Araki-G.** Calculation of Heteronuclear Molecular Integrals....**8** (1952), 615

(see Araki-G.).........**8** (1952), 639

Murai-Y. On the Path Integral and Its Application...................**6** (1951), 762

On the Group of Transformations in Six-Dimensional Space. I (*cf.* Errta: Vol. 9, p. 326)................**9** (1953), 147

On the Group of Transformations in Six-Dimentionl Space. II——*Conformal Group in Physies*——........**11** (1954), 441

Wave Equations in Conformal Space ——*Wave Equation for Nucleon*——.... .... **13** (1955), 109 (L)

Murakami-K. (see Murayama-T.) **15** (1956), 421

Murao-T. & **Matsubara-T.** On the Magnetic Properties of Cubic Cerium ..**18** (1957), 215

The Magnetic Properties of the Praseodymium and the Neodymium Metals **20** (1958), 277

Murata-K. (see Kanki-T.) **17** (1957), 7

Murayama-T. (see Miura-I.)............. ....**13** (1955), 115 (L)

——, **Murakami-K.**, **Tanaka-R.** & **Ogawa-S.** The Atomospheric Effects on the Intensity of High Energy μ-Mesons **15** (1956), 421

Murota-T., **Ueda-A.** & **Tanaka-H.** The Creation of an Electron Pair by a Fast Charged Particle............**16** (1956), 482

& **Ueda-A.** On the Foundation and the Applicability of Williams-Weizsäcker Method **16** (1956), 497

——— (see Amai-S.) **17** (1957), 807

Murthy-G. S. On the Relativistic Thomas-Fermi Atom.................**15** (1956), 473

Muto-T. Theory of the *F*-Centers of Coloured Alkali Halide Crystals. I.——*Structure of F-Absorption Bands*——......... .... **4** (1949), 181

——— Theory of the *F*-Centers of Coloured Alkali Halide Crystals. II ——*Electronic Structure of F-Centers. General Theory*——....................**4** (1949), 243

—— & **Ôyama-S.** Theory of the Temperature Effect of Electronic Energy Bands in Crystals. I. II .... **5** (1950), 833 (*cf.* Errata: Vol. 6, p. 445); **6** (1951), 61 (*cf.* Errata: Vol. 6, p. 446)

& **Inoue-K.** Note on Dirac's New Quantization Method in the Field Theory (*cf.* Errata: Vol. 6, p. 445)...**5** (1950), 1033

& **Tanifuji-M.** Interaction of μ-Meson with Matter. I ——*Nuclear Excitation by Electromagnetic Interaction*—— (*cf.* Errata: Vol. 6, p. 445) **6** (1951), 27

———, **Tanifuji-M.**, **Inoue-K.** & **Inoue-T.** Interaction of μ-Meson with Matter. II —— *Spontaneous Decay of Negative μ-Meson* ——.........**8** (1952), 13

& **Watanabe-M.** Theory of the Nuclear Magnetic Relaxation in Crystalline Solids. I ——*Direct Process*—— **8** (1952), 231

——— & **Sebe-T.** Electrodisintegration of He^4 Nucleus..................**18** (1957) 621

——, **Ôyama-S.** & **Okuno-H.** Electronic Structure of the Exciton in Ionic Crystal ——*Further Discussion of a Localized Exciton (Zero-th Order Description) and General Formulation of a Moving Exciton in Alkali Halides*——**20** (1958), 804

Nagae-M. On the Recombination Processes by the Auger Effect ....**19** (1958), 339 (L)

—— On the Auger Effect in the Deep Traps in Si..............**19** (1958), 341 (L)

Nagahara-Y. (see Ogawa-S.)....**5** (1950). 314 (L); **5,** 428; **6** (1951) 227; **6,** 444 (L)

— (see Yamada-E.) ..**6** (1951), 131 (L)

—— — & **Fujimura-J.** Some Remarks on the Photo-Disintegration of Deuteron. I.. ....**8** (1952), 49

Nagakura-T. Some Remarks on the Relativistic Quantum Field Theory........... ....**5** (1950), 502 (L)

Nagamiya-T. (see Yomosa-S.) ..**4** (1949), 263

——— Theory of Antiferromagnetism and Antiferromagnetic Resonance Absorption. I, II......................**6** (1951), 342, 350

Nagamiya-T. *(continued)*

On the Zero Point Entropy of Methane Crystals..............**6** (1951), 702

—— On the Theory of the Dielectric, Piezo-Electric and Elastic Properties of $NH_4H_2PO_4$....................**7** (1952), 275

—— A Tentative Interpretation of Bickford's Observation of the Resonance Absorption in Magnetite below Its Transition Point **10** (1953), 72

Theory of Antiferromagnetic Resonace in $CuCl_2 \cdot 2H_2O$ (*cf.* Errata: Vol. 15, p. 306).....................**11** (1954), 309

Nagasaki-M. & **Tamura-T.** On the Excited States of Even-Even Nuclei............ ....**12** (1954), 248 (L)

(see Kawai-M.) ....**14** (1955), 263 (L); **18** (1957), 66; **19** (1958), 77

Deuteron Stripping and the Compound Nucleus **16** (1956), 429

Nagata-Shozo (see Ozaki-S.) ....**8** (1952), 574 (L)

—— (see Knipp-J.K.)........**10** (1953), 24

(see Eguchi-T.) **20** (1958), 144

Nagata-Sinobu, Tamagaki-R., Amai-S. & **Marumori-T.** On the Collective Mode of Internal Motion of the Nucleus to be coupled with the Irrotational Surface Motion **19** (1958), 495

—— (see Ikeda-Kiyomi)....**20** (1958), 960

Naito-K. (see Yamamoto-K.)

Nakabayasi-K. On the Mesic Self-Field around a Nucleon **2** (1947), 163

—— Note on the Collision Energy Loss of Fast Charged Particle **3** (1948), 82

—— & **Sato-I.** Radiative Corrections to Anomalous Magnetic Moment of Nucleon in Pseudoscalar Meson Theory (*cf.* Errata: Vol. 12, p. 250 L) ....**6** (1951), 252 (L)

——, **Hasegawa-K.** & **Yamamura-I.** Fourth Order Calculations of Meson-Proton Scattering in the Symmetrical Ps(Ps) Theory ....**10** (1953), 694 (L)

, **Hasegawa-K.** & **Yamamura-I.** Fourth Order Phase Shifts for Meson-Proton Scattering in the Symmetrical Ps (Ps) Theory (*cf.* Errata: Vol. 11, p. 230) ....**10** (1953), 696 (L)

——, **Sato-I.** & **Akiba-T.** Radiative Corrections to the Anomalous Magnetic Moment of the Nucleon in Pseudoscalar Meson Theory (*Errata for* Vol. 6, p. 252) .... **12** (1954), 250 (L

& **Hasegawa-K.** Pion-Nucleon Scattering and Structure of Fourth-Order Matrix Elements in Ps(Ps) Meson Theory **17** (1957), 581

Nakagawa-K., Ohmura-T., Takebe-H. & **Obi-S.** Nuclear Reactions in the Later Stage of the Stellar Evolution **16** (1956), 389

Nakagawa-M. (see Hsieh-S. H.).......... ....**15** (1956), 79 (L)

Nakahara-O. (See Narumi-H.)............ .... **19** (1958), 591 (L)

Nakai-H. (see Kamefuchi-S.) ....**6** (1951), 891 (L

Nakai-S. (see Koba-Z.).........**5** (1950), 137 (L); **5,** 494 (L); **6** (1951), 322; **6,** 849

On the Green-Functions of Many-Electron Problem **11** (1954), 155

—— Bound States and *S*-Matrix in Quantum Field Theory **11** (1954), 179

Point Transformation and Its Application **13** (1955), 380

Note on the Isotopic Spin of the Antiparticle..................**17** (1957), 139

Nakajima-S. & **Shimizu-M.** On the Mechano-Caloric Effect in Liquid Helium II............................**5** (1950), 1010

& **Shimizu-M.** Two Fluid Theory of Liquid Helium II below 1°K......... .... **6** (1951), 122

(see Kondoh-A.)........**6** (1951), 939

On the Hydrodynamics of Degenerating Bose-Einstein Gases.....**6** (1951), 980

& **Kasuya-T.** A Comment on Bardeen's Theory of Superconductivity (*cf.* Errata: Vol. 20, p. 783)............ .... **18** (1957), 662 (L)

On Quantum Theory of Transport Phenomena ——*Steady Diffusion*——.... ....**20** (1958), 948

Nakamura-S. & **Ono-K.** On the β-Ray Spectrum of Cu^{64}.........**2** (1947), 158 (L)

(see Sasaki-M.)....**3** (1948), 454 (L)

(see Taketani-M.) ....**4** (1949), 552; **5** (1950), 730; **6** (1951), 286; **6,** 581; Sup. **1** (1955), 226; Sup. **1,** 234; Sup. **3** (1956), 169

Nakamura-S. *(continued)*

——, **Fukuda-H., Ono-K., Sasaki-M.** & **Taketani-M.** Analysis on the Two Meson Theory ....**5** (1950), 740; Sup. **1** (1955), 244

—— (see Umezawa-M.) **6** (1951), 408

——, **Takebe-H.** & **Umezawa-M.** β-Ray Spectrum and ft-Values in the Forbidden Transitions **6** (1951), 604

—— (see Kotani-T.)........**6** (1951), 1007

—— (see Tomozawa-Y.) **7** (1952), 317

—— (see Takebe-H.) **14** (1955), 317

—— (see Fujita-J.) **20** (1958), 287

Nakamura-Takashi, Ohno-K., Kotani-M. & **Hijikata-K.** Interaction of π-Electrons in the Acetylene Molecule.......... .... **8** (1952), 387

Nakamura-Tuto Note on the Theory of the Frequency Spectrum of Crystalline Solid **5** (1950), 213

—— Statistical Mechanics of Cooperative Phenomena..................**7** (1952), 241

—— On the Spin Wave Theory of Magnetic Susceptibility and Resonance Absorption in Antiferromagnetics **7** (1952), 539

—— Statistical Theory of Hindered Rotation in Molecular Crystals. II ——*Quantum Effects*——......**10** (1953), 95

——, & **Taketa-H.** On the Para- and Antiferromagnetic States of Cobalt Fluoride.......................**13** (1955), 129

—— On the Quenching of Molecular Rotation of Ortho-Hydrogen in Solid State **14** (1955), 135

—— Indirect Coupling of Nuclear Spin in Antiferromagnet with Particular Reference to MnF_2 at Very Low Temperatures........................ **20** (1958), 542

Nakanishi-N. General Integral Formula of Perturbation Term in the Quantized Field Theory................**17** (1957), 401

—— General Theory of Infrared Divergence........................**19** (1958), 159

—— A Theory of Clothed Unstable Particles. I, II....................... ....**19** (1958), 607; **20** (1958), 822

Nakano-H. An Algebraic Treatment of the Many-Electron Problem **9** (1953), 33

—— (see Kitano-Y.) **9** (1953), 370

—— The Heisenberg Theory of Ferromagnetism of the Crystal constituted by the Atoms with Spin One..**9** (1953), 403

—— (see Syozi-I.) **13** (1955), 69

—— A Method of Calculation of Electrical Conductivity ....**15** (1956), 77 (L); **17** (1957), 145

Nakano-T., Watanabe-Y., Hanawa-S. & **Miyazima-T.** Radiative Correction to Decay Processes. II..**5** (1950), 338 (L), 1014

—— On Internal Pair Creation following Some Beta-Decay......**6** (1951), 440 (L)

—— & **Nishijima-K.** Divergences arising from Nuclear Forces .... **6** (1951), 1024 (L)

——, **Nishimura-J.** & **Yamaguchi-Y.** On the Short μ-Meson Tracks from π-Meson Decays...........**6** (1951), 1028 (L)

—— & **Nishijima-K.** The S-Matrix Method in Pion Reactions **8** (1952), 53

—— (see Minami-Shigeo.)...**8** (1952), 531

—— & **Nishijma-K.** Charge Independence for V-Particles ....**10** (1953), 581 (L)

—— & **Utiyama-R.** A Tentative Theory of Λ-Particles ——*Theory of 4-Dimensional τ-Space*——............**11** (1954), 411

—— A Relativistic Field Theory of an Extended Particle. I **15** (1956), 333

—— (see Hayashi-C.)..**17** (1957), 615 (L)

Nakano-Y. On the Angular Distribution of $D+D$ Nuclear Reaction Products...... ....**8** (1952), 39

Nakasima-R. & **Kikuchi-K.** The Cu $(n; 2n)$ Excitation Function and the Knock-out Process in Nuclear Reactions........ .... **14** (1955), 126

——, **Tanaka-Y.** & **Kikuchi-K.** Interpretation on Nitrogen- and Proton-Induced Nuclear Reactions............**15** (1956), 574

—— (see Kammuri-T.)................ ....**17** (1957), 306 (L)

—— (see Nozawa-M.)..**17** (1957), 504 (L)

—— & **Kikuchi-K.** Interpretation on the Ratio of the Emission Probabilities for Protons and Neutrons....**17** (1957), 816 (L)

——, **Yamazaki-S.** & **Yoshizawa-Y.** Multipole Mixing in Odd Mass Spheroidal Nuclei **19** (1958), 31

—— (see Kakudo-Y.) ....**19** (1958), 353; **20** (1958), 243 (L); **20,** 779 (L)

Nakasima-R. (*continued*)

Note on Heavy Ion induced Nuclear Reactions............**19** (1958), 743 (L)

——— Nitrogen induced Nuclear Reactions in Sodium....................**20** (1958), 625

Nakayama-K. Note on the Strange Particle Effects in *S*-Wave Pion-Nucleon Scattering ....**19** (1958), 581 (L)

Nambu-Y. (see Ono-K.)....**3** (1948), 207 (A)

On the Relativistic Fromulation of the Perturbation Theory ....**3** (1948), 444 (L)

—— The Level Shift and the Anomalous Magnetic Moment of the Electron **4** (1949), 82

——— Second Configuration Space and Third Quantization ....**4** (1949), 96 (L)

——— (see Koba-Z.).......**4** (1949), 99 (L)

——— On the Method of the Third Quantization. I, II **4** (1949), 331, 399

—— A Note on the Eigenvalue Problem in Crystal Statistics.............**5** (1950), 1

—— The Use of the Proper Time in Quantum Electrodynamics. I....**5** (1950), 82

—— (see Kinoshita-T.) ....**5** (1950), 307 (L); **5,** 749

Derivation of the Interaction Potential from Field Theory ....**5** (1950), 321 (L)

—— Force Potentials in Quantum Field Theory **5** (1950), 614

——, **Nishijima-K.** & **Yamaguchi-Y.** On the Nature of *V*-Particles. I, II..... .... **6** (1951), 615 (L), 619 (L)

— & **Yamaguchi-Y.** Meson-Nucleon Scattering...................**6** (1951), 1000

On Lagrangian and Hamiltonian Formalism **7** (1952), 131

An Empirical Mass Spectrum of Elementary Particles......**7** (1952), 595 (L)

Namiki-M. & **Suzuki-Y.** On the Corpuscular Aspect of Quantum Theory of Field ....**8** (1952), 572 (L)

- & **Suzuki-Y.** New Formulation of One-Body Problem in Quantum Electrodynamics (*cf.* Errata: Vol. 10, p. 700) **9** (1953), 223

—— (see Mugibayashi-N.) ....**10** (1953), 108 (L)

—— & **Mugibayashi-N.** On the Radiation Damping and the Decay of an Excited State...........**10** (1953), 474 (L)

— (see Chiba-S.) ....**12** (1954), 693 (L)

, **Chiba-S.** & **Hanawa-S.** Zero-Energy Mesonic Processes and Renormalization in Schwinger's Formalism ....**12** (1954), 694 (L)

(see Hanawa-S.) **14** (1955), 551

——— (see Saito-N.)..........**16** (1956), 71

——— & **Iso-C.** Multiple Production of Particles and Hydrodynamical Aspect of Quantum Theory of Fields...**18** (1957), 591

& **Iino-R.** A New Mathematical Formulation of Quantum Mechanics in the Framework of Wave-Packet Theory —— *Transformation Theory, Theory of Scattering and Functional Differentiation* ——..................... Sup. **5** (1958), 65

Nanda-V.S. On Fermi's Theory of High Energy Nucleon-Nucleon Collisions....... ....**11** (1954), 605 (L)

— (see Trikha-S.K.) ....**15** (1956), 178 (L); **17** (1957), 126 (L); **17,** 679

& **Trikha-S.K.** Thermodynamic Properties of He^3........**16** (1956), 254 (L)

Nariai-H. & **Ueno-Y.** On the Tests of Gravitational Theories in terms of an Artificial Satellite **20** (1958), 703

Narumi-H. On the Transformation of Spin Functions.................**3** (1948), 202 (L)

& **Takano-Y.** On the Interaction between Nuclear Vibrational and Electronic States...............**5** (1950), 160 (L)

, **Watanabe-T.** & **Nakahara-O.** Reevaluation of the Electric Quadrupole Moment of the Deuteron..**19** (1958), 591 (L)

Naya-S. (see Kanô-K.) **10** (1953), 158

——— On the Spontaneous Magnetizations of Honeycomb and Kagomé Ising Lattices **11** (1954), 53

Niira-K. & **Oguchi-T.** On the Magnetic Anisotropy Energy of FeF_2 ..**11** (1954), 425

Nishida-M. (see Hayashi-C.) ....**16** (1956), 613; **17** (1957), 615 (L); **20** (1958), 110 (L)

(see Amai-S.).........**17** (1957), 807

Nishida-Y. & **Nogami-M.** High Energy Photo-Disintegration of the α-Particles... ....**4** (1949), 394 (L)

(see Kawaguchi-O.) ....**12** (1954), 99 (L)

Deuteron-Deuteron Reaction at High-Energy ....**14** (1955), 495 (L)

Nishida-Y. *(continued)*

——— Remarks on the Elastic Scattering of Deuterons by Heavy Nuclei (*cf.* Errata: Vol. 17, p. 734)..........**17** (1957), 506 (L)

Elastic Scattering of Deuterons by Heavy Nuclei **19** (1958), 389

& **Tanaka-H.** A Note on the Elastic Scattering of High Energy Deuterons by Complex Nuclei.................................... **20** (1958), 976 (L)

Nishijima-K. On the Spur Calculation in Quantum Mechanics ......**5** (1950), 155 (L)

On the Integrability Condition in the "Super-Many-Time Theory" **5** (1950), 187

——— Note on the Elimination of the Normal-Dependent Part from the Hamiltonian ....**5** (1950), 331 (L)

On the Elimination of the Normal-Dependent Part from the Hamiltonian.. .... **5** (1950), 405

On the Generalized Transformation Function and the Integrability Condition **5** (1950), 813

(see Fujimoto-Y.) .... **5** (1950), 870; **10** (1953), 113 (L)

Note on the Eigenvalue Problem in the Quantum Field Theory ..**6** (1951), 37

——— Generalized Furry's Theorem for Closed Loops. I, II...................................... **6** (1951), 614 (L), 1027 (L)

(see Nambu-Y.) .... **6** (1951), 615 (L); **6,** 619 (L)

On the Adiabatic Nuclear Potential. I, II......................**6** (1951), 815, 911

——— (see Nakano-T.) ....**6** (1951), 1024 (L); **8** (1952), 53; **10** (1953), 581 (L)

——— (see Machida-S.) **7** (1952), 57

On Lagrangian Formalism........ .... **8** (1952), 401

——— (see Minami-Shigeo.) ..**8** (1952), 531

——— Models of *V*-Particles....**9** (1953), 414

——— Many-Body Problem in Quantum Field Theory. I, II, III **10** (1953), 549; **12** (1954), 279; **13** (1955), 305

Some Remarks on the Even-Odd Rule ....**12** (1954), 107 (L)

(see Iwadare-J.) ..**12** (1954), 108 (L)

(see Shindo-M.) ..**13** (1955), 103 (L)

Charge Independence Theory of *V*-Particles **13** (1955), 285

—— Solutions of a Bethe-Salpeter Equation for Scattering States **14** (1955), 203

Some Remarks on the Reaction $K^-+d\rightleftarrows\Sigma^-+p$ **14** (1955), 523

On the Interaction between Hyperons and Nucleons and the Hyperfragments...................**14** (1955), 527

(see Kawaguchi-M.) .... **15** (1956), 180 (L); **15,** 182 (L)

— On the Asymptotic Conditions in Quantum Field Theory (*cf.* Addenda: Vol. 18, p. 101)..............**17** (1957), 765

Definition of Nuclear Potential.... .... Sup. **3** (1956), 138

Nishimura-J. (see Hayakawa-S.) .... **4** (1949) 232 (L); **4,** 577 (L); **4,** 578 (L); **5** (1950), 326 (L); **5,** 948

——— A Remark on the Transition Curve of Cosmic-Ray Showers....**5** (1950), 328 (L)

& **Kamata-K.** The Lateral and Angular Distribution of Cascade Showers .... **5** (1950), 899 (L)

& **Kamata-K.** On the Accuracy of the Molière Function. I, II .... **6** (1951), 262 (L), 628 (L)

& **Ida-K.** Note on the Cascade Function for Heavy Elements .... **6** (1951), 905 (L)

(see Nakano-T.) ..**6** (1951), 1028 (L)

——— & **Kamata-K.** On the Theory of Cascade Showers. I **7** (1952), 185

——— & **Kamata-K.** Note on the Contribution of the Single Scattering to the Lateral Structure of Cascade Showers.... .... **11** (1954), 608 (L)

(see Kamata-K.)....Sup. **6** (1958), 93

Nishimura-K. Spin and Size of Λ^0 Particle .... **18** (1957), 665 (L)

Nishiyama-T. Density Matrix and New Configuration Space ......**5** (1950), 135 (L)

(see Husimi-K.) **5** (1950), 909

—— An Algebraic Theory of the Density Matrix. II **6** (1951), 1

——— Note on Many Fermion Problems **6** (1951), 366

——— On the Interaction of the Lattice Vibrations with the Conduction Electrons .... **6** (1951), 897 (L)

——— On the Plasma-like Oscillation.... .... **6** (1951), 1025 (L)

——— On the Velocity Operator in Quantum Mechanics........... **7** (1952), 417 (L)

Nishiyama-T. *(continued)*

—— A Quantum Theory of Boson Assemblies. I **8** (1952), 655

—— A Quantum Theory of Boson Assemblies. II —— *A Classical Approach to Many-Boson Problems* —— ..**9** (1953), 245

—— A Hydrodynamical Description of Many Bose Particle Systems.. **12** (1954), 265

Theory of Sound-Waves and Collective Description............ **14** (1955), 37

—— State Vectors in the Collective Description.............. **16** (1956), 244 (L)

—— On Collective and Internal Motions in a Bose System............ **17** (1957), 711

——, **Sekiya-T.** & **Watanabe-Y.** Stationary Fusion Reactions at Low Temperatures............ **18** (1957), 93 (L)

—— Equivalent Hamiltonian of an Electron Gas at High Density.. **20** (1958), 245 (L)

Niu-K. On the κ-μ Decay-in-Flight in the Photographic Emulsion exposed at High Altitude................ **11** (1954), 499 (L)

Nogami-M. On the Angular Momentum of the Flügge's Nuclear Liquid Drop Model .... **2** (1947), 92 (A)

(see Tanifuji-M.).. **3** (1948), 215 (A)

& **Shôno-N.** On the Higher Approximation of Born's Method in the Theory of Atomic Collision .... **3** (1948), 215 (A)

—— On Born's Successive Approximation in the Theory of Atomic Collision **3** (1948), 356

—— On the Angular Momentum of the Atomic Nucleus induced by Its Surface Vibrations.................... **3** (1948), 362

—— (see Nishida-Y.).... **4** (1949), 394 (L)

—— On the Lattice Polarization induced by Electronic Motion........... **5** (1950), 56

—— On an Approximate Solution of the Many Body Problem of Fermi-Dirac Particles......................... **5** (1950), 65

Nogami-Y. & **Hasegawa-H.** Intermediate Coupling Meson Theory of Nuclear Forces. II.................... **15** (1956), 137

(see Komatsuzawa-A.) .... **20** (1958), 246 (L); **20,** 249 (L)

Noguchi-T. (see Kanazawa-H.)..**9** (1953), 288

Noma-S. On the Meson Pair Theory of Nuclear Forces. I, II .... **1** (1946), 71 ; **2** (1947), 92 (A); **3** (1948), 54

—— Modified Meson Pair Theory............................. **2** (1947), 159 (L)

(see Enatsu-H.).... **3** (1948), 215 (A)

—— & **Hiroishi-S.** On the Meson Pair Theory of Nuclear Forces. IV.................................. **3** (1948), 216 (A)

Absorption and Decay of Mesons in the Pair Theory...... **3** (1948), 216 (A)

Nomoto-M. Matrix Elements of β-Decay for a Spheroidal Core Model .... **13** (1955), 117 (L)

—— Pairing Energy of Nuclear Particles......................... **18** (1957), 483

Noya-H., **Arima-A.** & **Horie-H.** Nuclear Moments and Configuration Mixing .... Sup. **8** (1958), 33

Nozawa-M., **Goto-T.**, **Yajima-N.** & **Nakasima-R.** Antiproton-Nucleus and Antiproton-Proton Interactions ....**17** (1957), 504 (L)

Ôba-J. & **Goto-T.** Proton-Proton Scattering in the GeV Region —— *Criticism of the Blockhintsev-Bubelev Model* —— .... **20** (1958), 982 (L)

Obata-Y. (see Oguchi-T.)....... **9** (1953), 359

Obi-S. (see Isidu-T.).......**10** (1953), 690 (L)

(see Taketani-M.)...... **15** (1956), 89

— (see Nakagawa-K.).... **16** (1956), 389

Oda-M. (see Higashi-S.)... **16** (1956), 250 (L)

(see Kitamura-T.) ....**16** (1956), 252 (L)

Oda-N. (see Shôno-N.) **4** (1949), 358; **8** (1952), 28

(see Yukawa-J.)...**5** (1950), 320 (L)

& **Harada-K.** Elastic Scattering of Alpha-Particles by Heavy Elements.................................. **15** (1956), 545

Oda-Y. On the Coupling Constant of Charged Meson in the Non-Symmetrical Theory ....**3** (1948), 217 (A)

Ogawa-K. (see Terashima-Y.) .... **17** (1957), 814 (L)

Ogawa-S. (see Inoue-Takesi) .... **3** (1948), 319 (L); Sup. **1** (1955), 217

The Observability of the *C*-Meson **5** (1950), 72

A Note on the Mixed Shower .... **5** (1950), 138 (L)

Ogawa-S. *(continued)*

— & **Kamefuchi-S.** On the μ-Meson Decay.................... **5** (1950), 311 (L)

— & **Nagahara-Y.** The East-West Effect of Cosmic-Ray in the Upper Atmosphere.................... **5** (1950), 314 (L)

— & **Nagahara-Y.** On the East-West Effect of the Cosmic Radiation in the Upper Atmosphere........... **5** (1950), 428

— On the Positive Excess of the Hard Component in Cosmic-Ray .... **5** (1950), 489 (L)

— The Determination of the Multiplicity and the Spectrum of the Meson produced by the Nucleon-Nucleon Collision .... **5** (1950), 490 (L)

— & **Yamada-E.** On the Production of γ-Rays accompanied by the Absorption of π-Meson by a Proton ... **5** (1950), 503 (L)

— & **Yamada-E.** On the Production of γ-Ray accompanied with the Absorption of π-Meson by a Proton. I.... **5** (1950), 977

— & **Miura-S.** On the Effect of γ-Ray to the Cosmic-Ray Underground .... **5** (1950), 897 (L)

— (see Yamada-E.)....**6** (1951), 131 (L)

—, **Yamada-E.** & **Nagahara-Y.** On the Absorption of the Negative π-Meson by Deuteron................**6** (1951), 227, 444 (L, *Errata for* Vol. 6, p. 227)

— (see Miura-S.).....**6** (1951), 251 (L)

(see Komori-H.)... **7** (1952), 122 (L)

— On the Cosmic-Ray Bursts Underground — *The Interaction of π-Meson with Nucleon* — **8** (1952), 205

& **Marumori-T.** On the Nuclear Saturation.................. **10** (1953), 265

, **Okonogi-H.** & **Oneda-S.** On the Weak Universal Boson-Fermion Interaction.................... **11** (1954), 330 (L)

, **Sakita-B.** & **Taguchi-Y.** Notes on the Unstable Particles..**12** (1954), 691 (L)

(see Iwata-K.)......... **13** (1955), 19

On the Competition between Decay and Capture of the Unstable Particles due to the Weak Interactions......**13** (1955), 367

— (see Hirokawa-S.)..**14** (1955), 494 (L)

— (see Murayama-T.)... **15** (1956), 421

— On the Universality of the Weak Interaction................... **15** (1956), 487

— (see Furuichi-S.).......**17** (1957), 89

Ogimoto-T. & **Yamaguchi-Y.** Some Remarks on the Charged Mesic Decay of $^3H_\Lambda$.......................**17** (1957), 817 (L)

& **Shimizu-T.** On the Heavy Meson Production in the π^--Proton Reaction.................**18** (1957), 213 (L)

(see Konisi-G.)........ **20** (1958), 868

Ogita-N. (see Ueda-A.) .... **18** (1957), 269; **19** (1958), 582 (L)

Oguchi-T. On the Spin Wave Theory of Bloch Wall...................... **9** (1953), 7

& **Obata-Y.** A Theory of Antiferromagnetism. I **9** (1953), 359

— (see Niira-K.)......... **11** (1954), 425

A Theory of Antiferromagnetism. II...........................**13** (1955), 148

Note on the Ferromagnetic Resonance Absorption.............**17** (1957), 659

Ohmura-T. (formerly Kikuta-T.) Convergence of Iterative Methods...**10** (1953), 653

Nucleon Isobars and Nuclear Forces in Low Energy Region...**11** (1954), 118 (L)

A Variation Principle in Deuteron Problem..................**11** (1954), 493 (L)

Super-Stationary Variational Method......................... **12** (1954), 10

— Upper and Lower Bounds of Born Approximation. I, II.....**12** (1954), 225, 234

— Extentions of Variational Methods. I — *Super Stationary Variational Method* —..................**14** (1955), 457

— Extensions of Variational Methods. II — *Two Parameter Eigenvalue Problem for the Deuteron State* — **15** (1956), 50

, **Morita-M.** & **Yamada-M.** Effect of Hard Core on the Binding Energies of H^3 and He^3. I. II...................... ....**15** (1956), 222; **17** (1957), 326

Extensions of Variational Methods. III — *Determination of Potential from Phase Shift Function* —....**16** (1956), 231

(see Nakagawa-K.).... **16** (1956), 389

A New Formulation on the Electromagnetic Field (*cf.* Errata: Vol. 17, p. 129) ....**16** (1956), 684 (L)

— Stability of the Electron ....**16** (1956), 685 (L)

, **Hara-Y.** & **Yamanouchi-T.** Low Energy Electron-Hydrogen Scattering.... ....**20** (1958), 82

Ohno-K. (see Nakamura-Takashi)........ .... **8** (1952), 387

Ohno-K. (*continued*)
(see Takayanagi-K.)...**13** (1955), 243

Ohnuki-Y. (see Hara-O.)..............................**10** (1953), 114(L); **10,** 470 (L); **12** (1954), 177; **17** (1957), 819 (L); **17,** 820 (L); **17,** 822 (L); **19** (1958), 129
& **Hara-O.** On the Relation between Non-Local Urmaterie Field and Irreducible Local Field.............**10** (1953), 697 (L)

Ohnuma-S. (see Taketani-M.)........... **6** (1951), 635 (L); **6,** 638 (L); **7** (1952), 45
—— (see Machida-S.)... **6** (1951), 904 (L)
Note on the Tensor Interaction in Triplet Odd States........**8** (1952), 576 (L)

Ohta-M. (see Knipp-J. K.)...... **10** (1953), 24

Ohta-T. Transition Factor in Superexchange Interaction Matrix.........**9** (1953), 85 (L)
— Note on the Light Absorption in the Insulating Crystals...**10** (1953), 472 (L)
—— On the Atom-Exciton Interaction ....**10** (1953), 474 (L)

Ohyama-N. (see Hayashi-C.)...................................**20** (1958), 110 (L)

Oishi-Yasuo & **Katsumori-H.** A Remark on Neutron-Proton Mass Difference..............................**12** (1954), 109 (L)

Ôisi-Yasuharu (see Koba-Z.)...................................**3** (1948), 141; **3,** 229

Okabayashi-T. (see Fujimoto-Y.)..................................**5** (1950), 870
On the Fundamental Equation for the Nucleon..................**10** (1953), 499
—— A Remark on Tamm-Dancoff Approximation..........**12** (1954), 545 (L)
Note on the Bound State Problem ....**13** (1955), 338 (L)
—— & **Sato-S.** A Method of Renormalization for Unstable Particles...**17** (1957), 30
New Interpretation of Hyperonic Charge and Its Generalization to Leptons **20** (1958), 583

Okada-K. (see Yamamoto-Tsunenobu).... ....**15** (1956), 184 (L)

Okai-S. & **Sano-M.** Stripping Reactions and Nuclear Shell Model.....**14** (1955), 399 (L)
& **Sano-M.** Deuteron Stripping Reactions and Nuclear Shell Structure.. ....**15** (1956), 203
—— (see Fujimoto-Y.)..**16** (1956), 246 (L)
— A Model for the Inelastic Scattering of Nucleons.......**17** (1957), 308 (L)

Okamoto-K. Relation between the Quadrupole Moments and the Widths of the Giant Resonance of Photonuclear Reaction ....**15** (1956), 75 (L)

Okamura-Y. (see Ozaki-S.)..**8** (1952), 574 (L)

Okayama-T. Gneralization of Statistics... ....**7** (1952), 517
The Distribution Function of Degenerating Ensemble ——*An Addition to "Generalization of Statistics"*—— ....**10** (1953), 583 (L)
(see Yukawa-H.)...Sup. **1** (1955), 76

Okazaki-M. (see Kaneko-S.)...................................**13** (1955), 461 (L)

Okonogi-H. (see Minami-Shigeo)..................................... **8** (1952), 531
(see Hara-O.) ....**9** (1953), 184 (L); **10** (1953), 191
—— (see Ogawa-S.)....**11** (1954), 330 (L)
(see Iwata-K.).........**13** (1955), 19

Okubo-S. Non-Perturbation Approach Method by Edwards.....**10** (1953), 692 (L)
— Note on the Second Kind Interaction **11** (1954), 80
(see Fukuda-N.)........**12** (1954), 79
Diagonalisation of Hamiltonian.... ....**12** (1954), 102 (L)
Diagonalisation of Hamiltonian and Tamm-Dancoff Equation......**12** (1954), 603
Dispersion Relation for the Photoproduction of K-Mesons.......**19** (1958), 43

Okuno-H. (see Muto-T.) **20** (1958), 804

Oneda-S. (see Fukuda-H.) **4** (1949), 477
(see Ozaki-S.)......**4** (1949), 524; **5** (1950), 305 (L); **5,** 491 (L)
(see Sasaki-S.)..........**5** (1950), 25
, **Sasaki-S.** & **Ozaki-S.** On the Decay of Heavy Mesons. III ——*Case of the Unsymmetrical Interaction*——...... .... **5** (1950), 165
Note on the Theory of V-Particles and τ-Mesons............**6** (1951), 633 (L)
V-Particles and Nuclear Phenomena ....**6** (1951), 1014 (L)
Note on the Structure of the Interactions between Unstable Elementary Particles.................**8** (1952), 255 (L)
—— Note on the Law of Conservation of Heavy Particles........**8** (1952), 568 (L)
——On Some Properties of the Interactions between Elementary Particles.... .... **9** (1953), 327

Oneda-S. (*continued*)
— & **Umezawa-H.** On the Families of Spinor Fields..........**9** (1953), 685 (L)
(see Ogawa-S.)....**11** (1954), 330 (L)
(see Iwata-K.).........**13** (1955), 19
——— **Hori-S.** & **Wakasa-A.** On the Elementarity of the Weak Boson-Fermion Interaction. I, II ....**15** (1956), 300 (L), 302 (L)
, **Hori-S.** & **Wakasa-A.** On *K*-Meson Decays and the Universal Interactions....................**15** (1956), 304 (L)
Ono-K. (see Nakamura-S.)..**2** (1947), 158 (L); **5** (1950), 740; Sup. **1** (1955), 244
& **Nambu-Y.** On the Level Shift of Hydrogen Atom.......**3** (1948), 207 (A)
On the Spin of Neutrino.......... ....**6** (1951), 238
(see Taketani-M.)................ ....**6** (1951), 286; Sup. **1** (1955), 234
On the π-P Scattering ....**8** (1952), 676 (L)
The Theory of *V*-Particles........ ....**9** (1953), 524
Some Comments on the Theory of *V*-Particle...............**10** (1953), 111 (L
— & **Yokoi-K.** On Fermi's Theory of Multiple Production...**13** (1955), 101 (L)
On Bound Λ^0 Particles........... ....**13** (1955), 522
Ono-M. (see Ito-D.)........**15** (1956), 74 (L
Ono-S. Integral Equations between Distribution Functions of Molecules.......... ....**5** (1950), 822
Statistical Thermodynamics of Solutions of Electrolytes and Non-Electrolytes......................**6** (1951), 447
Statistical Mechanics of Phase Transition......................**8** (1952), 1
(see Mori-H.)..........**8** (1952), 327
The Quantum Statistical Theory of Transport Phenomena. III ——*Coarse-Grained Phase-Space Distribution Function*——.................**12** (1954), 113
Ôno-Y. On the Anomalous Magnetic Moment of Meson **5** (1950), 861
(see Sugawara-M.).............. ....**5** (1950), 901 (L)
& **Sugawara-M.** On the *D*-Function of Non-Local Fields ..**5** (1950), 902 (L)
——— & **Sugawara-M.** Behavior of *D*-Function in Yukawa's Non-Local Field Theory......................**6** (1951), 182
On the Energy-Momentum Tensor of Bopp-Type Non-Local Fields.......... ....**6** (1951), 898 (L), 925
—— On the Constants of Motion for the Case of Non-Localized Interactions.. ....**10** (1953), 125
Osada-J. (see Fujino-H.) **17** (1957), 751
(see Kobayashi-T.)..**18** (1957), 89 (L)
(see Sawaguri-T.)..**18** (1957), 91 (L)
& **Fujino-H.** Effect of the Non-Relativistic Recoil of a Source Particle in Quantum Field Theories **20** (1958), 487
Oshio-T. (see Higashi-S.)..**16** (1956), 250 (L)
Otake-S. (see Fukuda-N.)..**13** (1955), 110 (L)
Otsuki-S. (see Fujii-S.).................. ....**10** (1953), 478 (L); **11** (1954), 11
& **Fujii-S.** Phenomelogical Analysis of the Meson Theory of Nuclear Force **12** (1954), 521
——— & **Tamagaki-R.** Meson Theoretical Potentials in Triplet Odd State.......... ....**12** (1954), 806 (L)
—, **Sawada-T.** & **Suekane-S.** The Properties of the Meson Theoretical Potentials in Li^6 (*cf.* Errata: Vol. 14, p. 610) **13** (1955), 79
—— & **Tamagaki-R.** On the Meson-Theoretical Potentials........**14** (1955), 52
——, **Sawada-T.** & **Suekane-S.** Meson-Theoretical Potentials in N^{14}........... ....**14** (1955), 606 (L)
- (see Iwadare-J.) ..**15** (1956), 86 (L); **16** (1956), 455; **16,** 472; **16,** 604; **16,** 658; Sup. **3** (1956), 13; Sup. **3,** 32
——— (see Konuma-M.)......**19** (1958), 17
(see Matumoto-K.)............... ....**19** (1958), 216 (L
, **Tamagaki-R.** & **Watari-W.** On the Applicability of the Pion-Theoretical Nuclear Potential........**19** (1958), 217 (L)
Proton-Proton Scattering and Pion Theory of Nuclear Forces.... **20** (1958), 171
Otuka-M. (see Husimi-K.).....**10** (1953), 173
Ouchi-T. (see Sakuma-K.)......**6** (1951), 748
A Note on the *S*-Matrix in the Theory of the Non-Local Interaction.... ....**8** (1952), 253 (L
, **Senba-K.** & **Yonezawa-M.** On the Mass Reversal in the Quantized Field Theory..................**14** (1955), 172 (L)

Ouchi-T. (*continued*)
, **Senba-K.** & **Yonezawa-M.** Theory of Mass Reversal in the Quantized Field Theory **15** (1956), 431
& **Senba-K.** Charge Independence Hypothesis and Leptons..**16** (1956), 528 (L)
Selection Rule imposed by Mass Reversal....................**17** (1957), 743
Mass Reversal and Weak Interactions........................**20** (1958), 909

Ôyama-S. (see Muto-T.).................. **5** (1950), 833; **6** (1951), 61; **20** (1958), 804

Ozaki-S. On the Interaction between Vector Mesons and Nucleons..........**1** (1946), 56
(see Sato-I.)........**2** (1947), 92 (A)
(see Fukuda-H.).......**4** (1949), 477
, **Oneda-S.** & **Sasaki-S.** On the Decay of Heavy Mesons. I ——*On Pauli's Regulator in the Calculation of Meson Decay Problems*——..........**4** (1949), 524
(see Sasaki-S.)..........**5** (1950), 25
(see Oneda-S.)..........**5** (1950), 165
——, **Oneda-S.** & **Sasaki-S.** On the Decay of a Heavy Meson into Lighter Mesons..................**5** (1950), 305 (L)
—— On the Decay of Heavy Meson into Lighter Mesons................**5** (1950), 373
, **Oneda-S.** & **Sasaki-S.** On the New Mode of Interaction between Spinor Fields....................**5** (1950), 491 (L)
——, **Nagata-S.** & **Okamura-Y.** A Note on the Gauge Transformation in the Theory of Non-Local Interaction of the Fields ....**8** (1952), 574 (L)
On Quantum Electrodynamics without Subsidiary Conditions........... ....**14** (1955), 511
—— On a Non-Adiabatic Approximate Method in the Non-Linear Interaction Theory..................**20** (1958), 239 (L)

Pac-P. Y. (see Enatsu-H.)................ ......**6** (1951), 261 (L); **6**, 435 (L); **6**, 665
, **Tani-S.** & **Yamazaki-K.** A Generalization of the Foldy Transformation in Ps-Ps Meson Theory............ ....**12** (1954), 689 (L)

Pais-A. On the Baryon-Meson-Photon System.....................**10** (1953), 457

Pandya-S. P. (see Majumdar-R. C.) ....**8** (1952), 670 (L)
Low Lying Levels of P^{32} and *jj* Coupling................**18** (1957), 668 (L)
Low Levels of Some Nuclei in the $d_{3/2}-f_{7/2}$ Shell...............**19** (1958), 404

Pauli-W. On the Connection between Spin and Statistics.................**5** (1950), 526

Peaslee-D. C. β-Matrix Formalism as $\kappa \to 0$ ....**6** (1951), 639 (L)
A Speculation on *V*-Spin.......... ....**10** (1953), 227

Potts-R. B. & **Ward-J. C.** The Combinational Method and the Two-Dimensional Ising Model...................**13** (1955), 38

Raje-S. A. Linear Meson Wave Equation in de Sitter Space........**8** (1952), 384 (L)

Ramakrishnan-A. & **Mathews-P. M.** Numerical Work on the Fluctuation Problem of Electron Cascades ....**9** (1953), 679 (L)
& **Mathews-P. M.** Studies on the Stochastic Problem of Electron-Photon Cascades.....................**11** (1954), 95
—— & **Srinivasan-S. K.** Two Simple Stochastic Models of Cascade Multiplication..........................**11** (1954), 595
& **Srinivasan-S. K.** Fluctuations in the Number of Photons in an Electron-Photon Cascade...............**13** (1955), 93

Rivier-D. On the Quantum Theory of Fields **9** (1953), 633

Rose-M. E. (see Drell-S. D.)............. ....**7** (1952), 125 (L)

Rosenfeld-L. Meson Fields and Nuclear Forces **5** (1950), 519

Ross-M. (see Kotani-T.) **20** (1958), 643

Roy-T.C. Cepheid Vibration....**19** (1958), 470

Rustgi-O.P. (see Trikha-S.K.) ....**15** (1956), 296 (L), **17** (1957), 303 (L)

Rustgi-M. L. & **Levinger-J. S.** Magnetic Dipole Sum Rules for Photodisintegration of the Deuteron..........**18** (1957), 100 (L)

Saeki-K. (see Takeda-G.) **6** (1951), 994
— (see Tanikawa-Y.) .... **10** (1953), 232 (L)

Saito-N. & **Namiki-M.** On the Quantum Mechanics-like Description of the Theories of the Brownian Motion and Quantum Statistical Mechanics (*cf.* Errata: Vol. 17, p. 552)......................**16** (1956), 71

Saito-R. & **Morita-M.** Clebsch-Gordan Coefficients for $j_2=5/2$ **13** (1955), 540

Saito-Y., Watanabe-Y. & **Yamaguchi-Y.** Meson Production by γ-Rays from Deuterium **7** (1952), 103

Sakai-M. Note on the Nuclear Level of Spin 2^+ ....**15** (1956), 416 (L)

Sakamoto-M. & **Ishiguro-E.** He-He Repulsive Potential. I **15** (1956), 37

Sakamoto-Y. & **Sasakawa-T.** Elastic Scattering in High Energy and Impulse Approximation...........**19** (1958), 745 (L)

Sakata-S. & **Inoue-T.** On the Correlations between Mesons and Yukawa Particles ....**1** (1946), 143; Sup. **1** (1955), 203

—— & **Hara-O.** The Self-Energy of the Electron and the Mass Difference of Nucleons ....**2** (1947), 30 (L)

—— Correlation between Mutual Interactions of Elementary Particles.......... ....**2** (1947), 99 (A)

—— Theory of the Interaction of Elementary Particles. I —— *The Method of the Theory of Elementary Particles*—— ....**2** (1947). 145

—— On the Correlation between Yukawa Particle and Meson. II ....**3** (1948), 212 (A)

—— & **Umezawa-H.** On the Applicability of the Method of the Mixed Fields in the Theory of the Elementary Particles **5** (1950), 682

——, **Umezawa-H.** & **Kamefuchi-S.** On the Structure of the Interaction of the Elementary Particles. I ——*The Renormalizability of the Interactions*—— **7** (1952), 377

—— On a Composite Model for the New Particles ....**16** (1956), 686 (L)

—— (see Yukawa-H.) ....Sup. **1** (1955) 14; Sup. **1,** 24; Sup. **1,** 46; Sup. **1,** 72; Sup. **1,** 75

—— & **Tanikawa-Y.** The Spontaneous Disintegration of the Neutral Mesotron (Neutretto) .... Sup. **1** (1955), 81

—— Connection between the Meson Decay and the Beta-Decay ....Sup. **1** (1955), 83

—— (see Taketani-M.)..Sup. **1** (1955), 84

—— & **Taketani-M.** Note on Casimir's Method of the Spin Summation in the case of the Meson ....Sup. **1** (1955), 98

—— On the Theory of the Meson Decay....................Sup. **1** (1955), 109

—— On Yukawa's Theory of the Beta-Disintegration and the Lifetime of the Meson....................Sup. **1** (1955), 118

Sakihama-K. & **Takagi-S.** Nucleonic Components at High Altitudes .... **6** (1951), 1017 (L)

Sakita-B. (see Ogawa-S.)..**12** (1954), 691 (L)

—— (see Iwata-K.) **13** (1955), 19

Sakuma-K., Shôno-N. & **Ouchi-T.** Relativistic Two-Body Problem in Quantum Theory **6** (1951), 748

Sakuma-T. (see Kanazawa-A.)............ ....**20** (1958), 149

——, **Furui-S.** & **Kanazawa-A.** The Dispersion Relation and the Pion-Nucleon Interaction Cross Section at Very High Energies **20** (1958), 835

Salam-A. The Field Theory of Superconductivity..................**9** (1953), 550

Sanada-J. (see Yamabe-S.)............... .... **5** (1950), 1049 (L)

Sano-M. (see Kawaguchi-O.)............. ....**12** (1954), 99 (L)

—— On the Gamma-Transition of Nuclei **14** (1955), 81

—— (see Okai-S.) ....**14** (1955), 399 (L); **15** (1956), 203

—— (see Iso-S.) ......**15** (1956), 510 (L)

—— (see Iwadare-J.) **16** (1956), 658

—— (see Arima-A.)........**17** (1957), 567

—— The Electric-Octupole Transitions of Nuclei **18** (1957), 223

Sasakawa-T. A Note on Many-Particle Problems..................**9** (1953), 182 (L)

—— & **Sawada-T.** Symmetric Fission ....**9** (1953), 324 (L)

—— The Statistical Quantum Mechanics of Time-Dependent Phenomena and Viscosity...................**10** (1953), 116 (L)

—— & **Sawada-T.** An Interpretation of Asymmetric Fission ..**10** (1953), 585 (L)

—— The Formal Theory of Error Estimation of Rearrangement Collisions .. .. **11** (1954), 121 (L)

Sasakawa-T. *(continued)*
see Hayakawa-S.) ....
.... **12** (1954), 401 (L)
—— (see Kajikawa-R. ....
.... **16** (1956), 152 (L)
—— On the Energy Matrix of the Tensor Forces (*cf.* Errata: Vol. 17, p. 825).................. **16** (1956), 256 (L)
see Sakamoto-Y. ....
.... **19** (1958), 745 (L)
—— & **Yasuno-M.** Spontaneous Fission Half-Lives.................... **20** (1958), 315

Sasaki-M. see Koba-Z.) ....
.... **3** (1948), 141; **3,** 229
——, **Nakamura-S.** & **Hayakawa-S.** On the Existence of Light Nuclear Mesons.................. **3** (1948), 454 (L)
—— & **Suzuki-R.** On the Reaction of Radiation Field................ **4** (1949), 485
—— (see Taketani-M.) .. **4** (1949), 552; **5** (1950), 730; **6** (1951), 581; Sup. **1** (1955), 226; Sup. **1,** 234; Sup. **3** (1956), 169
—— (see Miyazima-T.).. **5** (1950), 152 (L)
—— (see Baba-K.)...... **5** (1950), 159 (L)
(see Nakamura-S. ....
.... **5** (1950), 740; Sup. **1** (1955), 244
—— (see Matsuzaki-Y.)..... **7** (1952), 573
Photodisintegration of the Deuterons at High Energies (*cf.* Errata: Vol. 9, p. 96).................. **8** (1952), 557
(see Komoda-T.) ....
.... **8** (1952), 669 (L); **9** (1953), 468 (L)

Sasaki-S. (see Fukuda-H.)...... **4** (1949), 477
—— (see Ozaki-S.)...................
4 (1949), 524; **5** (1950), 305 (L); **5,** 491 (L)
——, **Oneda-S.** & **Ozaki-S.** On the Decay of Heavy Mesons. II ——*Case of the Symmetrical Interaction*—— ....
.... **5** (1950), 25
—— (see Oneda-S.).......... **5** (1950), 165

Sato-H. On the Thermal Conductivity of Ferromagnetics.......... **13** (1955), 119 (L)

Sato-I. & **Ozaki-S.** On the Production of Cosmic Ray Bursts by Mesotrons........
.... **2** (1947), 92 (A)
(see Nakabayasi-K.).............
...... **6** (1951), 252 (L); **12** (1954), 250 (L)
Nuclear Forces in Pseudoscalar Meson Theory................ **10** (1953), 323
—— & **Itabashi-K.** Electromagnetic Properties of Deuteron .. **12** (1954), 100 (L)
& **Ichikawa-Y.** A Classical Treatment of the Scattering of Electromagnetic Waves by Nucleons............
.... **12** (1954), 812 (L)
—— & **Itabashi-K.** Electromagnetic Properties of Deuteron **13** (1955), 341
, **Itabashi-K.** & **Sato-S.** On the Recoil Correction to Adiabatic Nuclear Potential **14** (1955), 303
—— (see Akiba-T.) **19** (1958), 93

Sato-Masatomo (see Fukuda-N.).........
.... **8** (1952), 231 (L)
(see Maki-Z.) .... **9** (1953), 607; **10** (1953), 386; Sup. **2** (1955), 193
(see Amai-S.) **17** (1957), 241
Notes on the Magnetic Mirror Effect........................ **20** (1958), 737

Sato-Masachiyo (see Watanabe-M.) ......
.... **5** (1950), 162 (L)
—— General Formula of the Racah Coefficient **13** (1955), 405

Sato-Shigeo (see Okabayashi-T.)........
.... **17** (1957), 30

Satô-Shinji Recoil Effect and Spin-Orbit Coupling .... **13** (1955), 457 (L)
—— (see Sato-I.) **14** (1955), 303

Sawada-K. On the Negative Energy Photon .... **3** (1948), 214 (A)
, **Takagi-S.** & **Kobayasi-M.** Notes on the Self-Energy Problems.... **4** (1949), 71
& **Takagi-S.** On the Multiple Production of Mesons .... **4** (1949), 239 (L)
Note on the Finite Extension of Electron **4** (1949), 275
—— A Divergence Free Field Theory
.... **4** (1949), 374 (L), 412
(see Katayama-Y.) ....
.... **4** (1949), 377 (L); **5** (1950), 14
Magnetic Moment of Nucleon ....
.... **4** (1949), 383 (L)
On the Magnetic Moment of Nucleon **4** (1949), 532
—— Note on the Self-Energy and Self-Stress..................... **4** (1949), 568 (L)
Note on the Self-Energy and Self-Stress. I, II.............. **5** (1950), 117, 236
—— (see Hori-S.) ...... **5** (1950), 333 (L)
Structure of Electron in λ-Process
.... **5** (1950), 497 (L)
—— On the Interaction of Cohesive Field...................... **6** (1951), 626 (L)

Sawada-K. (*continued*)
Note on Some Type of Interaction ....**6** (1951), 637 (L)
—— On the Model of *V*-Particle and Meson-Nucleon Scattering ....**7** (1952), 592 (L)
—— On the Scattering Problem in Pseudoscalar Meson in Pseudovector Coupling **9** (1953), 455
—— (see Fukuda-N.) **12** (1954), 79; **12,** 156
—— (see Akiba-T.) **12** (1954), 94
Sawada-T. (see Sasakawa-T.) ....**9** (1953), 324 (L); **10** (1953), 585 (L)
—— (see Otsuki-S.) ....**13** (1955), 79; **14** (1955), 606 (L)
Sawaguri-T. & **Osada-J.** Numerical Discussions on *P*-Wave Meson-Nucleon Scattering ....**18** (1957), 91 (L)
Sawamura-M. (see Hiida-K.) .... **14** (1955), 167 (L); **18** (1957), 451
Schafroth-M.R. (see May-R.M.) **19** (1958), 646
Schiff-L. I. On an Expression for the Total Cross Section **11** (1954), 288
Sebe-T. On the Infrared Catastrophe in the Problem of Electron Scattering ...... **3** (1948), 95 (L), 304
—— (see Muto-T.) **18** (1957), 621
Segawa-H. (see Hori-S.) **19** (1958), 249
Segawa-T. & **Teramoto-E.** Statistical Mechanics of Surface Tension of Curved Interface. I.................. **11** (1954), 528
Sekine-K. A Theory of Lepton Which is Invariant under Space Inversion .... **19** (1958), 740 (L)
Sekiya-T. (see Nishiyama-T.) .... **18** (1957), 93 (L)
Senba-K. (see Machida-S.) **13** (1955), 389
—— (see Ouchi-T.) ....**14** (1955), 172 (L); **15** (1956), 431; **16** (1956), 528 (L)
—— On a Classification of Light Particles ....**17** (1957), 519 (L)
Shah-S.M. (see Bhatia-A.B.) ..**17** (1957), 561
Shibata-H. (see Higashi-S.) .... **16** (1956), 250 (L)
Shimazu-H. A Note on the Theory of Ferromagnetism **4** (1949), 160
—— The Propagation of Order in Crystal Lattices **4** (1949), 201
—— (see Hara-O.) ....**5** (1950), 1055 (L); **7** (1952), 255; **7,** 591 (L); **8** (1952), 265; **9** (1953), 137
—— & **Hara-O.** On Yukawa's Theory of Non-Local Field ....**8** (1952), 385 (L)
—— A Relativistic Wave Equation for a Particle with Two Mass States of Spin 1 and 0 ....**16** (1956), 287
Shimizu-Masao (see Nakajima-S.) **5** (1950), 1010; **6** (1951), 122
—— (see Kondoh-A.) **6** (1951), 939
—— On the Magnetism of Magnetic Compounds ——*General Treatment of Superexchange Interaction*—— **8** (1952), 416
Shimizu-Mikio, Mizuno-Y. & **Izuyama-T.** Molecular Processes induced by μ^- Mesons in Hydrogen Bubble Chamber. I —*Transfer Process of μ^- Meson from Proton to Deuteron*——..**20** (1958), 777 (L)
Shimizu-T. (see Ogimoto-T.) .... **18** (1957), 213 (L)
Shimodaira-H. (see Hara-O.) ....**10** (1953), 114 (L); **10,** 470 (L); **12** (1954), 177
—— (see Matumoto-K.) .... **19** (1958), 216 (L)
Shimooda-H. On the New Description of Quantum Mechanics ......**7** (1952), 597 (L)
Shimoura-K. (see Katsumori-H.) .... **20** (1958), 578 (L)
Shindo-M. & **Nishijima-K.** Recoil Correction to the Adiabatic Nuclear Potential .... **13** (1955), 103 (L)
—— (see Hatano-S.) **12** (1954), 167
Shindo-T. Excitation of Metal Electrons by an Energetic Primary Particle............ **12** (1954), 406 (L)
Shingh-I. Effect of Electromagnetic Radiation on Lamb Shift ......**10** (1953), 476 (L)
Shingh-K.K. (see Baijal-J.S.) ..**14** (1955), 214
Shiozaki-T. (see Ikeda-Kiyomi) **20** (1958), 960
Shôno-N. (see Nogami-M.) ....**3** (1948), 215 (A)
—— & **Oda-N.** On Dirac's Indefinite Metric Space..................**4** (1949), 358 (*cf.* Errata: Vol. 4, p. 581)
—— & **Hagiwara-H.** The Half-Life of Radioactive Decay of Free Neutron............**4** (1949), 364 (L)
—— (see Sakuma-K.) **6** (1951), 748
—— & **Oda-N.** Note on the Non-Local Interaction **8** (1952), 28

Shôno-N. (*continued*

Non-Local Theory of Nucleon-Meson Field ....**8** (1952), 133 (L

Shôno-Y. see Hamada-T. .... **13** (1955), 102 (L

Simon-A. (see Ashkin-J.) **5** (1950), 634

Sodha-M.S. & **Eastman-P. C.** Effect of Electron-Electron Scattering on Hall Mobility of Electrons in *n* Semiconductors ....**19** (1958), 344 (L)

Soga-M. (see Kawai-M.)........**18** (1957), 66

Srinivsan-S.K. (see Ramakrishnan-A.).... ....**13** (1955), 93

Sucher-J. (see Bhatia-A.K.) .... **20** (1958), 397 (L)

Suekane-S. Effect of Collective Motion on Beta Decay..............**10** (1953), 480 (L)

(see Otsuki-S. ....**13** (1955), 79; **14** (1955), 606 (L)

—— & **Watari-W.** On the Binding Energies of Very Light Nuclei .... **14** (1955), 490 (L)

—— (see Marumori-T.) ....**15** (1956), 582 (L); **15,** 584 (L); **16** (1956), 320

—— & **Yamaguchi-Y.** The Magnetic Octupole Moments of Nuclei..**17** (1957), 443

—— & **Yamaguchi-Y.** The Hexadecapole Moments of Atomic Nuclei **17** (1957), 449

—— (see Hayashi-C.)..**17** (1957), 615 (L)

—— & **Watari-W.** Rigidity for Octupole Type Surface Deformation and Shell Structure................**20** (1958), 108 (L)

Suga-K. (see Watase-Y.) ..**18** (1957), 314 (L)

Sugahara-Y. (see Furuichi-S.)........... .... **16** (1956), 64 (L); **17** (1957), 89

Sugano-R. & **Munakata-Y.** On the Bethe-Salpeter Equation for the Scalar-Spinor Particle System..........**16** (1956), 532 (L)

—— (see Komatsuzawa-A.)........... ....**20** (1958), 246 (L); **20,** 249 (L)

Sugawara-M. On the Theory of Nuclear Force ....**3** (1948), 442 (L)

—— & **Ôno-Y.** On the Equivalence of Pseudoscalar and Pseudovector Coupling Constant in Pseudoscalar Meson Theory ....**5** (1950), 901 (L)

—— (see Ôno-Y.) .... **5** (1950), 902 (L); **6** (1951), 182

Remarks on Bethe's Neutral Theory of Nuclear Force.............**5** (1950), 920

The Mass Variation with Velocity in Bopp's Unitary Field Theory. I...... .... **7** (1952), 303

—— & **Minami-S.** The Mass Variation with Velocity in Bopp's Unitary Field Theory. II **7** (1952), 563

—— Excited States of Elementary Particle and the Quantization of Elementary Particles............**7** (1952), 599 (L)

—— (see Hamada-T.) ....**8** (1952), 256 (L); **8,** 363; **9** (1953), 555 (L)

—— Phenomenological Explanation of Magnetic Moments of Nucleons in terms of the Excited States of Nucleons........ .... **8** (1952), 549

(see Matsumoto-T.) **9** (1953), 1; **10** (1953), 199; **12** (1954), 553

(see Kanazawa-A.)............**10** (1953), 399; **11** (1954), 231; **16** (1956), 95

—— The Relativistic and Exchange Current Corrections to the Deuteron Magnetic Moment and the Thermal *N-P* Capture Cross Section **14** (1955), 535

Static Model in the Meson Theory **18** (1957), 383

Sugie-A. & **Yoshida-S.** Angular Distribution of the Deuteron Photodisintegration at Moderate Energies.... **10** (1953), 236 (L)

The Effect of the Mass Difference between Charged and Neutral Pions on the Nuclear Force ......**11** (1954), 333 (L)

(see Morita-M.) **12** (1954), 713

Sugihara-K. On the Spin-Lattice Relaxation at Extremely Low Temperatures.... .... **10** (1953), 234 (L)

Sunakawa-S. (see Utiyama-R.) ....**6** (1951), 587; **7** (1952), 328 (L); **8** (1952), 77

—— (see Imamura-T.) **11** (1954), 291

—— , **Imamura-T.** & **Utiyama-R.** Renormalization of Two-Electron Green-Function **12** (1954), 642

The Formal Theory of Scattering **14** (1955), 175

(see Kanki-T.)..........**17** (1957), 7

—— Quantum Electrodynamics with the Indefinite Metric ——*Non-Lorentz-Invariance of the Gupta Formalism*—— **19** (1958), 221

Sundaresan-M. K. (see Majumdar-R.C.) **6** (1951), 737

Suura-H. *V*-Particle as a Composite One .... **6** (1951), 893 (L)

Suura-H. (*continued*)

——, **Mimura-Y.** & **Kimura-T.** On the Analytic Behavior of Dyson Transformation Function............**7** (1952), 171

—— On a Treatment of Many-Particle Systems in Quantum Field Theory...... ....**12** (1954), 49

Suzuki-C. (see Teramoto-E.)..**14** (1955), 411

Suzuki-H. On the Meaning of the Interaction. II ....**2** (1947), 96 (A)

—— Note on the Wave-Equation in the Non-Localizable System....**4** (1949), 394 (L)

Suzuki-I. (see Takano-Y.)............... ....**10** (1953), 110 (L)

Suzuki-R. (see Sasaki-M.)......**4** (1949), 485

(see Miyazima-T.) ....**5** (1950), 152 (L)

—— Deuteron Photodisintegration at High Energies................**15** (1956), 536

Suzuki-Y. (see Namiki-M.) ....**8** (1952), 572 (L); **9** (1953), 223

Srinivasan-S. K. (see Ramakrishnan-A.).. ....**11** (1954), 595

Symanzik-K. Dispersion Relations and Vertex Properties in Perturbation Theory **20** (1958), 690

Syozi-I. (see Husimi-K.)........**5** (1950), 177

—— The Statistics of Honeycomb and Triangular Lattice. II........**5** (1950), 341

—— Statistics of Kagomé Lattice...... ....**6** (1951), 306

—— & **Nakano-H.** Statistical Models of Ferrimagnetism...........**13** (1955), 69

Tachiki-M. & **Yosida-K.** Antiferromagnetism of Zn-Ferrite............**17** (1957), 223

—— (see Yosida-K.)........**17** (1957), 331

Taguchi-Y. (see Ogawa-S.) ....**12** (1954), 691 (L)

—— & **Kawabe-R.** Hyperon Decays and Characteristics of Interactions between Elementary Particles ....**19** (1958), 586 (L)

Takabayasi-T. On the Formulation of Quantum Mechanics associated with Classical Pictures.............**8** (1952), 143

—— Remarks on the Formulation of Quantum Mechanics with Classical Pictures and on Relations between Linear Scalar Fields and Hydrodynamical Fields **9** (1953), 187

—— A Non-Local Wave Equation and Its Connection with the Dirac Particle.. ....**9** (1953), 557 (L)

—— On the Separability of Dirac Equation.................**9** (1953), 681 (L)

—— 'Quantum Condition' in the Phase-Space Representation of Quantum Mechanics.................**10** (1953), 119 (L)

—— Equivalence between the Formulation of Quantum Mechanics in terms of Quantum Potential and the One in terms of Markoff-like Process..**10** (1953), 121 (L)

—— Subsidiary Conditions in the Phase-Space Representation of Quantum Mechanics —— *Supplements to Previous Notes* —..............**10** (1953), 122 (L)

—— The Formulation of Quantum Mechanics in terms of Ensemble in Phase Space.........................**11** (1954), 341

—— On the Hydrodynamical Representation of Non-Relativistic Spinor Equation ....**12** (1954), 810 (L)

—— On the Structure of Dirac Wave Function ....**13** (1955), 106 (L)

—— Relativistic Hydrodynamics equivalent to the Dirac Equation ....**13** (1955), 222 (L)

—— The Vector Representation of Spinning Particle in the Quantum Theory. I **14** (1955), 283

—— & **Vigier-J. P.** Description of Pauli Matter as a Continuous Assembly of Small Rotating Bodies......**18** (1957), 573

—— Relativistic Hydrodynamics of the Dirac Matter ....Sup. **4** (1957), 1

Takagi-S. (see Kanai-E) **1** (1946), 43

(see Yamamoto-Tsunenobu) ....**2** (1947), 160 (L)

—— Some Remarks on the Theory of β-Disintegration...........**3** (1948), 445 (L)

(see Sawada-K.).................. ....**4** (1949), 71; **4,** 239 (L)

(see Katayama-Y.) .... **4** (1949), 240 (L); **5** (1950), 14; **5,** 336 (L)

—— On the Production of π-Mesons in Nucleon-Nucleon Collisions....**4** (1949), 557

—— (see Sakihama-K.)..**6** (1951), 1017 (L)

—— Note on the Statistical Theory of the Meson Shower........**7** (1952), 123 (L)

—— (see Fujii-S.) ....**14** (1955), 402 (L); **14,** 405 (L)

Takagi-S. *(continued)*
—— (see Iwadare-J.)...... **16** (1956), 658
(see Kammuri-T.).. **17** (1957), 306 (L)

Takahashi-A. (see Ishida-K.)....................................... **11** (1954), 611 (L)

Takahashi-K. (see Morita-A.).. **19** (1958), 257

Takahashi-T. Invariant Delta Functions in the sense of Distributions.... **11** (1954), 1

Takahashi-Yasushi (see Umezawa-H.) ... **6** (1951), 426 (L); **6**, 428 (L); **9** (1953), 501
—— & **Miyazima-T.** Electronoj Ekvilibraj kun Mezonoj en Malalta Atmosfero .... **6** (1951), 431 (L)
—— Meson Current around the Nucleon .... **6** (1951), 624 (L)
—— & **Umezawa-H.** The General Discussion of the Self-Stress.................................... **7** (1952), 330 (L)
& **Umezawa-H.** On the Self-Stress **8** (1952), 193
—— & **Umezawa-H.** On the Interaction Representation........... **8** (1952), 493 (L)
—— & **Umezawa-H.** The General Theory of the Interaction Representation. I——*The Local Field*——..... **9** (1953), 14
—— On the Gauge Invariancy and the Structure of Elementary Particles............................... **10** (1953), 366 (L)
—— On Gauge Invariance and the Structure of Elementary Particle................................. **11** (1954), 251
On the Equivalence Theorem.............................. **13** (1955), 105 (L)

Takahashi-Yasutaro (see Ito-D.)................................ **15** (1956), 74 (L)

Takahata-M. (see Kaneko-S.)................................... **13** (1955), 461 (L)

Takano-F. (see Wada-Y.).. **19** (1958), 597 (L)

Takano-T. (see Igarasi-S.)...................................... **17** (1957), 124 (L)

Takano-Y. (see Enatsu-H.)................................ **4** (1949), 375 (L); **4**, 543
—— (see Narumi-H.).... **5** (1950), 160 (L)
—— New Description of Field................................ **9** (1953), 86 (L)
—— & **Suzuki-I.** New Description of Field——*Classical Field*——.............................. **10** (1953), 110 (L)

Takasu-M., Goto-S., Fujimura-J. & **Kawabe-R.** Photo Positive Pion Production .... **9** (1953), 92 (L)
(see Goto-Shigeo)....... **9** (1953), 312

Takayanagi-K. (see Fujimoto-Y.).......................... **5** (1950), 498 (L); **5**, 870
—— & **Yamaguchi-Y.** Notes on Fluctuation in Nuclear Evaporation Process .... **5** (1950), 894 (L)
(see Aidzu-K.)......... **5** (1950), 931
On the Theory of Chemically Reacting Gas.................. **6** (1951), 486
—— On the Inelastic Collision between Molecules. I.................. **8** (1952), 111
—— On the Inelastic Collision between Molecules. II——*Rotational Transition of H_2-Molecule in the Collision with another H_2-Molecule*——(*cf.* Errata: Vol. 10, p. 369)............... **8** (1952), 497
—— & **Kishimoto-T.** On the Inelastic Collisions between Molecules. III——*Rotational Transitions in He_2-Gas*——(*cf.* Errata: Vol. 10, p. 369).. **9** (1953), 578
The Theory of Collisions between Two Diatomic Molecules..... **11** (1954), 557
& **Ohno-K.** Collisions between Non-Spherical Molecules. I——*Molecular Collisions in Hydrogen Gas at Lower Temperatures*——........... **13** (1955), 243

Takebe-H. (see Nakamura-S.)... **6** (1951), 604
(see Kotani-T.)................. **6** (1951), 1007; **7** (1952), 469; **8** (1952), 120
—— Pseudoscalar Interaction in the Theory of Beta-Decay and RaE.. **10** (1953), 673
—— Beta-Ray Spectra. I, II, III.. **12** (1954), 561, 574 (*cf.* Errata: Vol. 13, p. 127), 747
——, **Nakamura-S.** & **Taketani-M.** β-Ray Spectrum of RaE...... **14** (1955), 317
—— (see Matsunobu-H.).... **14** (1955), 589
—— (see Nakagawa-K.).... **16** (1956), 389

Takeda-G. (see Koba-Z.)........................ **3** (1948), 98 (L); **3**, 203 (L); **3**, 407; **4** (1949), 60; **4**, 130; **19** (1958), 269
Note on the Vacuum Polarization .... **4** (1949), 573 (L)
(see Fukuda-H.)...................................... **5** (1950), 800; **5**, 957
(see Aidzu-K.)......... **5** (1950), 931
——, **Tanikawa-Y.**, **Taniuti-T.** & **Saeki-K.** Note on the Bloch-Nordsieck's Method...................... **6** (1951), 994

Takeda-G. (*continued*)

—— On the Renormalization Theory of the Interaction of Electrons and Photons **7** (1952), 359

—— Isotopic Spin and Strange Particles **19** (1958), 631

—— (see Kato-M.) ......Sup. **7** (1958), 35

Takeno-H., Ikeda-M. & Abe-S. On Solutions of New Field Equations of Einstein and Those of Schroedinger............................ **6** (1951), 837

—— On Relativistic Theory of Rotating Disk........................ **7** (1952), 367

—— (see Ueno-Y.).......... **8** (1952), 291

—— On the Spherically Symmetric Space-Times in General Relativity **8** (1952), 317

—— A Generalization of Special Lorentz Transformation in de Sitter Space-Time **10** (1953), 431

—— Static Spherically Symmetric Space-Times in General Relativity........................... **10** (1953), 509

—— The Problem of Many Bodies and the Superposition of Spherically Symmetric Space-Times in General Relativity........................... **11** (1954), 392

—— On Equivalent Observers. II................................**12** (1954), 129

—— & **Ueno-Y.** On the Wave Theory of Light in General Relativity. III ——*Electromagnetic Four Potential*—— **15** (1956), 322

—— A Comparison of Plane Wave Solutions in General Relativity with Those in Non-Symmetric Theory....**20** (1958), 267

Takeno-S. On the Line Width in Ferromagnetic Resonance..........**18** (1957), 448 (L)

Taketa-H. (see Nakamura-Tuto).................................... **13** (1955), 129

Taketani-M. Conflict between Matter and Field——*An Analysis of the Difficulties of the Theory of Elementary Particles*—— **2** (1947), 187

—— On the Neutral Meson..**3** (1948), 349

——, **Sasaki-M. & Nakamura-S.** On the mu-Meson Capture .... **4** (1949), 552; Sup. **1** (1955), 226

——, **Machida-S. & Tamura-T.** On the Electromagnetic Properties of Nucleons ....**5** (1950), 150 (L)

——, **Nakamura-S. & Sasaki-M.** On the Method of the Theory of Elementary Particles.....................**5** (1950), 73)

—— (see Nakamura-S.) .... **5** (1950), 740; Sup. **1** (1955), 244

——, **Nakamura-S., Ono-K. & Umezawa-M.** On the Matrix Elements of the Beta Decay........... **6** (1951), 286

—— (see Umezawa-M.)..... **6** (1951), 408

—— & **Machida-S.** On the Production of Negative Protons.......... **6** (1951), 559

——, **Nakamura-S. & Sasaki-M.** On the Method of the Theory of Nuclear Forces....................... **6** (1951), 581

——, **Ohnuma-S. & Koide-S.** On the Nuclear Forces and the Ground State of Deuteron................. **6** (1951), 635 (L)

——, **Machida-S. & Ohnuma-S.** Meson Theory of Nuclear Forces..**6** (1951), 638 (L)

—— (see Machida-S.)... **6** (1951), 904 (L)

——, **Machida-S. & Ohnuma-S.** The Meson Theory of Nuclear Forces. I ——*The Deuteron Ground State and Low Energy Neutron-Proton Scattering*—— **7** (1952), 45

—— (see Fujii-S.) .... **10** (1953), 478 (L); **11** (1954), 11

—— (see Fukuda-N.)...... **12** (1954), 156

—— (see Takebe-H.).......**14** (1955), 317

——, **Hatanaka-T. & Obi-S.** Populations and Evolution of Stars... **15** (1956), 89

—— (see Inoue-Kazuhiko)..**15** (1956), 122

—— (see Yukawa-H.)............................... Sup. **1** (1955), 24; Sup. **1**, 46

—— & **Sakata-S.** On the Wave Equation of Meson..................Sup. **1** (1955), 84

—— (see Sakata-S.).....Sup. **1** (1955), 98

—— On the Neutral Meson .... Sup. **1** (1955), 219

——, **Nakamura-S., Ono-K. & Sasaki-M.** On the Two-Meson Theory.............................. Sup. **1** (1955), 234

——, **Nakamura-S. & Sasaki-M.** On the Method of the Theory of Nuclear Forces.................. Sup. **3** (1957), 169

Takeuti-Y. On the Exciton Problem in Insulating Crystals...........**18** (1957), 421

Tamagaki-R. (see Otsuki-S.)....**12** (1954), 806 (L); **14** (1955), 52; **19** (1958), 217 (L)

Tamagaki-R. (*continued*)

—— (see Iwadare-J.).................. **15** (1956), 86 (L); **16** (1956), 455; **16,** 472; **16,** 604; Sup. **3** (1956), 13; Sup. **3,** 32

(see Nagata-Sinobu)...**19** (1958), 495

Tensor and Spin-Orbit Forces in Nucleon-Nucleon Scattering...**20** (1958), 505

Tamaki-H. Pri la Ondoekvacio de Korpuskloj kun Entjerplusduona Spino .... Sup. **1** (1955), 177

—— Pri la al Duastufa undoro Operaciendaj Operatoroj........Sup. **1** (1955), 187

Tamura-T. (see Taketani-M.) ....**5** (1950), 150 (L)

—— (see Machida-S.) ....**6** (1951), 437 (L); **6,** 572; **6,** 1030 (L)

(see Horie-H.) ....**6** (1951), 623 (L); **8** (1952), 341

(see Fujimoto-Y.) ....**6** (1951), 901 (L); **8** (1952), 221

On the Neutron He⁴ Scattering... .... **11** (1954), 335 (L)

(see Nagasaki-M.) ....**12** (1954), 248 (L)

(see Morita-M.).......**12** (1954), 653

—— (see Miyazima-T.).... **15** (1956), 255

Tanabe-Y. (see Arima-A.).....**11** (1954), 143

Tanaka-Hajime (see Hiroishi-S.) ....**4** (1949), 231 (L); **5** (1950), 134 (L)

—— (see Tokuoka-Z.).......**8** (1952), 599

—— Adiabatic Process and the Stationary State....................**13** (1955), 497

—— (see Murota-T.) **16** (1956), 482

Tanaka-Hiromi (see Nishida-Y.)........ ....**20** (1958), 976 (L)

Tanaka-Hiroshi (see Ito-D.) .... **7** (1952), 128 (L); **11** (1954), 501 (L); **12** (1954), 105 (L)

Tanaka-M. A Note on the Magnetic Relaxation in a Low Field.... **20** (1958), 251 (L)

Tanaka-R. (see Marumori-T.)........... .... **13** (1955), 442

—— (see Murayama-T.)... **15** (1956), 421

Tanaka-S. & **Itô-M.** On the Natural Decay of the Free Neutron.......... **9** (1953), 169

—— & **Umezawa-H.** On the Transition Matrix and the Green Function in the Quantum Field Theory.......**10** (1953), 617

Some Remarks on the Charge Conjugation.................. **12** (1954), 72

(see Umezawa-H.).... **12** (1954), 383

(see Kamefuchi-S. ....**13** (1955), 334 (L); **14** (1955), 225

—— The Composite Model for New Unstable Particles. I. II **16** (1956), 625, 631

The Parity Conservation and the Strength of the Interaction of Elementary Particles....................**18** (1957), 295

Tanaka-T., Katsumori-H. & **Toshima-S.** On the Theory of Cooperative Phenomena **6** (1951), 17

— (see Yamahuzi-K.)....**20** (1958), 327

Tanaka-Yoshihisa (see Nakasima-R.) **15** (1956), 574

Tanaka-Yasuo (see Watase-Y.) .... **18** (1957), 314 (L)

Tani-K. (see Yamamoto-Tsunenobu)...... .... **15** (1956), 184 (L)

Tani-Smio (see Koba-Z.).... **4** (1949), 99 (L)

Note on the Formal Solution of the Tomonaga-Schwinger Equation **4** (1949), 209

— (see Endo-S.)...... **5** (1950), 310 (L)

—— Connection between Particle Models and Field Theories. I —— *The Case Spin* 1/2——.......... **6** (1951), 267

(see Fujii-S. .... **10** (1953), 478 (L); **11** (1954), 11

Analysis of the Structure of Transformation Function in Quantum Mechanics.................. **11** (1954), 190

Reformulation of Brueckner-Watson Method by means of Canonical Transformations......... **12** (1954), 104 (L)

—— (see Pac-P. Y.)... **12** (1954), 689 (L)

—— & **Yamazaki-K.** On the Meaning of the Solution to the One-Body Dirac Equation **12** (1954), 723

—— & **Watari-W.** Connection of the Strong Coupling Theory with the Weak Coupling Theory in the Bound Meson Problem —— *The Symmetrical Scalar Theory*—— **14** (1955), 243

(see Kobayashi-T.) ....**18** (1957), 89 (L)

Tani-Sho-ichiro (see Kanazawa-H.) **19** (1958), 153

Tanifuji-M. & **Nogami-M.** On the Internal Conversion of γ-Rays in M-Shells........ ....**3** (1948), 215 (A)

(see Muto-T.).................. ....**6** (1951), 27; **8** (1952), 13

Tanifuji-M. *(continued)*
(see Hagiwara-H.)................ .... **18** (1957), 97 (L); **18,** 322 (L)

Tanikawa-Y. On the Generalized Transformation Functions (*cf.* Errata: Vol. 1, p. 150)........................**1** (1946), 12
—— On the Lifetime of the Neutral Meson ....**2** (1947), 31 (L)
—— On the Decay of the Charged Meson ....**2** (1947), 31 (L)
——, **Hirano-M.** & **Tatsuoka-M.** Interaction of Elementary Particles —— *Mixed Theory of Nuclear Fields*——.... .... **2** (1947), 93 (A)
—— On the Exclusion Principle of the Assembly of the Systems of Bose-Particles with Negative Energy ....**2** (1947), 93 (A)
—— On the Self-Energy of the Bose Particles ....**2** (1947), 94 (A)
—— The Supplementary Note to the Generalized Transformation Function ....**2** (1947), 219 (L)
—— On the Cosmic-Ray Meson and the Nuclear Meson.......**2** (1947), 220 (L); Sup. **1** (1955), 211
—— On the Quantum Theory of Radiation Damping and the Lifetime of the Meson **3** (1948), 38
—— On the Theory of the Radiation Damping ....**3** (1948), 213 (A)
—— On the Beta-Disintegration Possibility accompaning with the Capture of a Negative Meson by a Nucleus........... ....**3** (1948), 213 (A)
—— & **Hara-O.** On the Electromagnetic Self Energy of a Moving Electron ....**3** (1948), 213 (A)
—— On the Relations between the Cosmic-Ray Mesons and Nuclear Mesons. I, II ....**3** (1948), 314 (L), 315 (L)
—— On the Theory of β-Disintegration **3** (1948), 338
—— A New Interpretation of the Negative Energy Bose Field ..**5** (1950), 692
—— (see Takeda-G.)........**6** (1951), 994
—— Theory of Super-Quantization of Quantized Field and Its Application **7** (1952), 193
—— & **Saeki-K.** On the Theory of β-Decay ....**10** (1953), 232 (L)
—— On the Interaction Forms of the Beta-Decay ....**10** (1953), 361 (L)
—— (see Sakata-S.) ....Sup. **1** (1955), 81
—— Note on the Lifetime of the Neutral Meson ....Sup. **1** (1955), 174

Taniuti-T. On the Čerenkov Radiation.... .... **6** (1951), 207
—— (see Takeda-G.)........**6** (1951), 994
—— Čerenkov Radiation and Supersonic Flows........................**10** (1953), 525
—— On the Theories of Higher Derivative and Non-Local Couplings. I, II **13** (1955), 505; **15** (1956), 19
—— On the Heisenberg's Non-Linear Meson Equation..........**14** (1955), 408 (L)
—— On the Wave Propagation in the Non-Linear Fields. I. II **17** (1957), 461; **20** (1958), 529
—— On the Propagation of the Hydromagnetic Waves in Compressible Ionized Fluid.........................**19** (1958), 69
—— An Example of Isentropic Steady Flow in the Magnetohydrodynamics .... **19** (1958), 749 (L)

Tati-T. (see Koba-Z.)....**2** (1947), 101; **2,** 198
—— (see Miyazima-T.) **3** (1948), 26
—— & **Tomonaga-S.** On the Level-Shift due to Radiation Reaction.......... ....**3** (1948), 211 (A)
—— & **Tomonaga-S.** A Self-Consistent Subtraction Method in the Quantum Field Theory. I..............**3** (1948), 391
—— On the Many-Body Problem in the Intermediate Coupling Theory. I........ ....**10** (1953), 421
—— Separation Energies and Nuclear Structures in Light Nuclei ..**14** (1955), 107
—— A Theory of Elementary Particles **18** (1957), 235
—— On Parity Nonconservation .... **20** (1958), 398 (L)
—— (see Miyazima-T.) .... Sup. **2** (1956), 181

Tatsuoka-M. (see Tanikawa-Y.) .... **2** (1947), 93 (A)
—— (see Hara-O.) **3** (1948), 369

Teramoto-E. (see Segawa-T.)..**11** (1954), 528
—— Chain Configuration and Rubber Elasticity................**11** (1954), 604 (L)
—— & **Suzuki-C.** The Statistical Mechanical Aspect of H-Theorem. I **14** (1955), 411

Teramoto-E. (*continued*)

—— The Statistical Mechanical Aspect of the *H*-Theorem. II........**15** (1956), 480

Terasaki-F. & **Mannari-I.** On the Spin-Lattice Relaxation Process in Ferromagnets ....**18** (1957), 552 (L)

Terasawa-T. (see Kawai-M.) ..**18** (1957), 66

Terashima-Y. On the Plural-Multiple Model of High Energy Meson Showers.. ....**13** (1955), 1

—— (see Hayakawa-S.)......**14** (1955), 497; **18** (1957), 555 (L); Sup. **6** (1958), 1

——, **Kitao-K.** & **Ogawa-K.** Acceleration of Cosmic Rays by Hydromagnetic Wave....................**17** (1957), 811 (L)

Thomas-R.C. A Formulation of the Theory of Alpha Particle Decay from Time-Independent Equations **12** (1954), 253

Toda-M. Molecular Theory of Liquid Helium.......................**6** (1951), 458

—— & **Ishihara-A.** On the Liquid He^3 and Its Mixture with He^4.....**6** (1951), 480

Tokano-T. (see Hara-O.) .... **3** (1948), 316 (L); **4** (1949), 103

Tokuoka-Z. & **Katayama-Y.** Some Remarks on the Non-Local Field Theory.......... ....**6** (1951), 132 (L)

—— & **Tanaka-H.** On the Equivalence of the Particle Formalism and the Wave Formalism of Meson. I **8** (1952), 599

—— On the Equivalence of the Particle Formalism and the Wave Formalism of Meson. II ——*Case of Interacting Meson and Nucleon Fields*——......**10** (1953), 137

Tomita-K. The State of Solid Methane as inferred from Nuclear Magnetic Resonance ....**8** (1952), 138 (L)

—— & **Fukui-K.** On the Electronic Structure of LiH Atomic Orbital Approach with Configurational Interaction .... **10** (1953), 362 (L)

—— & **Mannari-I.** On the State of Solid Hydrogen................**10** (1953), 367 (L)

—— Equivalence between the Line Width and the Rate of Energy Relaxation in the Inversion Spectrum of Ammonia .... **17** (1957), 513 (L)

—— On the Pressure Shift of the Inversion Frequency of Ammonia......... .... **18** (1957), 316 (L)

—— A General Theory of Magnetic Resonance Saturation **19** (1958), 541

—— A General Theory of Magnetic Double Resonance **20** (1958), 743

Tomonaga-S. On a Relativistically Invariant Formulation of the Quantum Theory of Wave Fields **1** (1946), 27

—— On the Effect of the Field Reactions on the Interaction of Mesotrons and Nuclear Particles. I. II. III. IV **1** (1946), 83, 109; **2** (1947), 6, 63

—— Some Considerations about the Production of Meson Showers in Matter .... **2** (1947), 90 (L)

—— (see Hayakawa-S.) ......**2** (1947), 95 (A); **2**, 161 (L); **4** (1949), 287; **4**, 196

—— Note on the Scattering of a Meson on colliding with a Nucleon............. .... **2** (1947), 96 (A)

—— Some Consideration about the Production of Meson Showers in Matter .... **2** (1947), 99 (A)

—— Super-Many-Time Formulation of the Quantum Theory of Wave Fields.... ....**2** (1947), 100 (A)

—— (see Koba-Z. ....**2** (1947), 101; **2**, 198; **2**, 218 (L); **3** (1948), 211 (A); **3**, 290

—— (see Ito-D.).............**2** (1947), 216 (L); **2**, 217 (L); **3** (1948), 276; **3**, 325

—— (see Kanesawa-S. **3** (1948), 1; **3**, 101

—— (see Tati-T.) ....**3** (1948), 211 (A); **3**, 391

—— (see Miyazima-T.) ..**3** (1948), 26; Sup. **2** (1955), 21; Sup. **2**, 82; Sup. **2**, 181

—— (see Fukuda-H.)................. ....**4** (1949), 47; **4**, 121; **4**, 385 (L); **4**, 477

—— Remarks on Bloch's Method of Sound Waves applied to Many-Fermion Problems.....................**5** (1950), 544

—— (see Maki-Z.)................... .... **9** (1953), 607; Sup. **2** (1955), 193

—— Elementary Theory of Quantum-Mechanical Collective Motion of Particles. I, II **13** (1955), 467, 482

—— & **Araki-G.** Effect of the Nuclear Coulomb Field on the Capture of Slow Mesons.................. Sup. **1** (1955), 82

—— Zur Theorie des Mesotrons. I.... .... Sup. **2** (1955), 1

—— Bemerkung über die Streuung der Mesotronen am Kernteilchen ....Sup. **2** (1955), 68

Tomonaga-S. (*continued*)
—— On the Effect of the Field Reaction on the Interaction of Mesotrons and Nuclear Particles. I. II. III, IV .... Sup. **2** (1955), 119, 138, 154, 173

Tomozawa-Y., Umezawa-M. & **Nakamura-S.** Beta-Spectrum of the Third Forbidden Transition of Rb^{87} .. **7** (1952), 317
& **Umezawa-M.** Note on the Forbidden Transition in Beta-Decay **7** (1952), 323
(see Umezawa-H.) .... **15** (1956), 417 (L)

Toshima-S. (see Tanaka-T.) **6** (1951), 17

Toya-T. Influence of the Exchange and Correlation on the Electron-Phonon Interaction in Metals .... **20** (1958), 971 (L)
—— Electrical Conductivity of Monovalent Metals .... **20** (1958), 973 (L)
Normal Vibrations of Copper .... **20** (1958), 974 (L)

Toyoda-T. Recoil Effects in the Strong Coupling Theory. I, II **10** (1953), 415; **14** (1955), 473
(see Inoue-Kazuhiko) .. **15** (1956), 122
(see Iwadare-J.) .... Sup. **3** (1956), 13
— (see Machida-S.) .. Sup. **3** (1956), 106

Toyoda-Y. (see Miura-I.) .... **13** (1955), 115 (L)

Toyozawa-Y. (see Inui-T.) **8** (1952), 355
—, **Inui-T.** & **Uemura-Y.** On the Interaction of Additive Electrons with the Polarization in Ionic Crystals. I, II **9** (1953), 563; **10** (1953), 57
On the Electronic Polaron State .. .. **9** (1953), 677 (L)
Theory of the Electronic Polaron and Ionization of a Trapped Electron by an Exciton **12** (1954), 421
(see Kubo-R.) .... **12** (1954), 805 (L); **13** (1955), 160
The Exciton-Lattice Interaction and the Line Shape of the Exciton Absorption Band .... **19** (1958), 214 (L)
Theory of Line-Shapes of the Exciton Absorption Bands **20** (1958), 53

Trehan-S.K. (see Majumdar-R.C.) **12** (1954), 31

Trikha-S.K. & **Nanda-V.S.** On Solutions of He^3 and He^4 .... **15** (1956), 178 (L); **17** (1957), 679
& **Rustgi-O.P.** Surface Tension of Liquid He^4 and Liquid He^3 .... **15** (1956), 296 (L)
—— (see Nanda-V.S.) .. **16** (1956), 254 (L)
& **Nanda-V.S.** On the Effective Normal Fluid Density of Solution of He^3 in He^4 .... **17** (1957), 126 (L)
& **Rustgi-O.P.** The Surface Tension of Liquid He^3 ...... **17** (1957), 303 (L)
— Viscosity and Heat Conductivity of Liquid He^3 .... **17** (1957), 609 (L)
Theory of Liquid He^3 .. **18** (1957), 1
Density of the Normal Component for Solutions of He^3 and He^4 .... **19** (1958), 346 (L)

Tsuchida-T. & **Kanazawa-A.** On the Consistency between the *P*-Wave Dispersion Relation and the Experiment .... **20** (1958), 395 (L)

Tsuda-H. (see Hayashi-C.) .... **20** (1958), 110 (L)

Tsuneto-T., Hirosige-T. & **Fujiwara-I.** Relativistic Wave Equations with Maximum Spin Two. I **14** (1955), 267
& **Fujiwara-I.** Relativistic Wave Equations with Maximum Spin Two. II **20** (1958), 439

Tsuya-N. Microwave Resonance in Ferrimagnetic Substance .... **7** (1952), 263 (L)
On the Spin Wave Field Theory and Its Application to the Microwave Resonance **12** (1954), 1

Tsuzuki-Y. (see Enomoto-S.) **7** (1952), 353

Tutihasi-S. Intervals of Si IV ²P Levels.. .... **4** (1949), 317
(see Araki-G.) .... **6** (1951), 135; **6**, 430 (L)

Ueda-A. & **Hasegawa-H.** Diffusion of the Nucleonic Component in the Atmosphere .... **8** (1952), 262 (L)
see Murota-T.) **16** (1956), 482; **16,** 497
& **Ogita-N.** On the Structure of Extensive Air Showers **18** (1957), 269
—— & **Ogita-N.** On the Lateral Distribution of the Electron Component in Extensive Air Showers .. **19** (1958), 582 (L)

Uemura-Y. (see Inui-T.) **5** (1950), 252; **5,** 395; **8** (1952), 355

Uemura-Y. (*continued*)

— see Toyozawa-Y. **9** (1953), 563; **10** (1953), 57

Ueno-Y. & **Takeno-H.** On Equivalent Observers.................... **8** (1952), 291

On the Equivalency for Observers in the Special Theory of Relativity.................................... **9** (1953), 74

— On the Wave Theory of Light in General Relativity. I ——*Path of Light*——...................... **10** (1953), 442

— On the Wave Theory of Light in General Relativity. II ——*Light as the Electromagnetic Wave*——... **12** (1954), 461

(see Takeno-H.) **15** (1956), 322

(see Nariai-H.)........ **20** (1958), 703

Ui-H. (see Kawaguchi-O.).. **12** (1954), 99 (L)

Formal Theory of Nuclear Direct Interaction in Nuclear Scattering.................................. **14** (1955), 75 (L)

see Kawai-M. .... **14** (1955), 263 (L); **18** (1957), 66

General Theory of Deuteron Induced Reaction. I ——(*d, p*) *and* (*d, n*) *Reactions*——................ **16** (1956), 299

Inelastic Scattering of Neutrons and Surface Direct Processes.................................... **18** (1957), 163

Umezawa-H. see Hara-O. .... **3** (1948), 212 (A)

—, **Yukawa-J.** & **Yamada-E.** The Problem of Vacuum Polarization (*to be continued* to Vol. 3, p. 456).. **3** (1948), 317 (L)

—— & **Yamada-E.** The Problem of Vacuum Polarization (*continued from* Vol. 3, p. 317)............... **3** (1948), 456 (L)

——, **Yukawa-J.** & **Yamada-E.** Theory of the Interaction of Elementary Particles. IV$_1$, IV$_2$, ——*The Problem of Vacuum Polarization*——........... **4** (1949), 25 (*cf.* Errata: Vol. 4, p. 242), 113

& **Yamada-E.** Theory of the Interaction of Elementray Particles. V ——*The Problem of Vacuum Polarization*——.................................. **4** (1949), 251

& **Kawabe-R.** An Improvement on the Integrations appearing in Perturbation Theory .... **4** (1949), 367 (L)

& **Kawabe-R.** General Formulae appearing in the Problem of the Vacuum Polarization .... **4** (1949), 368 (L)

& **Kawabe-R.** Vacuum Polarization due to Various Charged Particles .... **4** (1949), 369 (L)

(see Kawabe-R. .... **4** (1949), 370 (L); **4,** 461

—— & **Kawabe-R.** An Improvement of the Integrations appearing in Perturbation Theory...................... **4** (1949), 420

& **Kawabe-R.** Some General Formulae relating to Vacuum Polarization.................................. **4** (1949), 423

& **Kawabe-R.** Vacuum Polarization due to Various Charged Particles.................................. **4** (1949), 443

& **Kawabe-R.** A Remark on the Problem of Gauge-Invariancy................................... **5** (1950), 153 (L)

—— & **Kawabe-R.** On the Relativistically Improved Integration in Perturbation Theory ——*Its Meaning in Feynman Theory*——.................. **5** (1950), 266

(see Yukawa-J.).................... **5** (1950), 320 (L); **6** (1951), 112; **6,** 197

(see Sakata-S.)................................ **5** (1950), 682; **7** (1952), 377

—— & **Kawabe-R.** On the Problem of Gauge-Invariancy and Divergence in the Theory of Elementary Particles. I................................. **5** (1950), 769

——, **Takahashi-Y.** & **Kamefuchi-S.** On the Meson Cloud around the Nucleons .... **6** (1951), 426 (L)

———, **Takahashi-Y.** & **Kamefuchi-S.** On the Multiple Production of Mesons..................................... **6** (1951), 428 (L)

— & **Kamefuchi-S.** The Vacuum in Quantum Electrodynamics..... **6** (1951), 543

— (see Takahashi-Yasushi).................. **7** (1952), 330 (L); **8** (1952), 193; **8,** 493 (L); **9** (1953), 14

(see Kamefuchi-S.)............... **7** (1952), 399; **8** (1952), 579; **8,** 675 (L); **9** (1953), 529; **15** (1956), 293 (L)

—— On the Structure of the Interactions of the Elementary Particles. II —*Does the Interaction of the Second Kind exist in the Nature?*——...................................... **7** (1952), 551

— & **Takahashi-Y.** The General Theory of the Interaction Representation. II —*General Fields and Interactions*——.................................. **9** (1953), 501

Umezawa-H. (*continued*)

(see Oneda-S.)..... **9** (1953), 685 (L)

——— (see Tanaka-S.)....... **10** (1953), 617

, **Kamefuchi-S.** & **Tanaka-S.** On the Time Reversal in the Quantized Field Theory...................... **12** (1954), 383

———, **Kamefuchi-S., Tomozawa-Y.** & **Konuma-M.** On the Renormalization Cut-off...................... **15** (1956), 417 (L)

On the Structure of Interactions .... Sup. **7** (1958), 67

Umezawa-M. (see Horie-H.).. **6** (1951), 254 (L)

(see Taketani-M.)...... **6** (1951), 286

-, **Nakamura-S., Yamaguchi-Y.** & **Taketani-M.** Nuclear Shell Model and the β-Decay Schemes. I......... **6** (1951), 408

(see Nakamura-S.)..... **6** (1951), 604

——— (see Kotani-T.).... **6** (1951), 1007; **7** (1952), 469; **8** (1952), 120

(see Tomozawa-Y.)...................................... **7** (1952), 317; **7,** 323

The *j-j* Coupling Shell Model (*cf.* Errata: Vol. 10, p. 124)....... **8** (1952), 509

- Note on a *j-j* Coupling Shell Model **10** (1953), 505

Usui-T. A Note on the Pressure Equation of the Two Fluid Model of Helium II **6** (1951), 244

(see Koide-S.).................................... **6** (1951), 506; **6,** 622 (L)

(see Kambe-K.)................................. **7** (1952), 15; **8** (1952), 302

Utiyama-R. On the Interaction of Mesons with the Gravitational Field. I, II.......................... **2** (1947), 38; **3** (1948), 14

On the λ-Limiting Process................................ **2** (1947), 98 (A)

On the Canonical Transformation in Quantum Theory.......... **2** (1947), 117

On the Classical Theory of the Electron. I, II............ **3** (1948), 114, 219

On the Covariant Formalism of the Quantum Theory of Fields. I, II..................... **5** (1950), 437; **6** (1951), 65

(see Husimi-K. .... **5** (1950), 718; **6** (1951), 432 (L)

, **Imamura-T., Sunakawa-S.** & **Dodo-T.** Note on the Longitudinal and Scalar Photons.............. **6** (1951), 587

, **Sunakawa-S.** & **Imamura-T.** On the Green-Functions of the Quantum Electrodynamics.......... **7** (1952), 328 (L)

(see Dodo-T.)...... **7** (1952), 589 (L)

, **Sunakawa-S.** & **Imamura-T.** On the Theory of the Green-Functions in Quantum Electrodynamics...... **8** (1952), 77

& **Imamura-T.** Difficulty of Divergence of the Perturbation Method in the Quantum Theory of Field .... **9** (1953), 181 (L), 431

On the Convergence of the Perturbation Method in the Quantum Field Theory..................... **9** (1953), 593

——— (see Imamura-T.)..... **11** (1954), 291

(see Nakano-T.)...... **11** (1954), 411

——— & **Imamura-T.** A Remark on the Infinities due to the New Complex Poles of Modified Propagators..**11** (1954), 606 (L)

(see Sunakawa-S.).... **12** (1954), 642

Utiyama-T. Statistics of Two-Dimensional Ising Lattice of Chequered Types .... **6** (1951), 907 (L)

Villi-C. (see Ferrari-F.)...**11** (1954), 328 (L)

Vigier-J.P. (see Takabayasi-T.).................................... **18** (1957), 573

Wada-M. (see Kameda-T.)..................................... **7** (1952), 1; **7,** 586 (L)

Wada-Y. (see Kawai-M.)....... **18** (1957), 66

, **Takano-F.** & **Fukuda-N.** Exact Treatment of Bardeen's Theory of Superconductivity in the Strong Coupling Limit .... **19** (1958), 597 (L)

Wakano-M. (see Kita-H.)...... **17** (1957), 63

Wakasa-A. (see Oneda-S.) ......**15** (1956), 300 (L); **15,** 302 (L); **15,** 304 (L)

(see Furuichi-S.)............................ **16** (1956), 64 (L); **17** (1957), 89

———(see Hori-S.).......... **19** (1985), 249

Wakita-H. Some Remarks on the Applicability of the Field Theory from the Standpoint of the Distribution Analysis.. .... **14** (1955), 260 (L)

——— On the Representations of Field Quantities.................... **20** (1958), 35

Ward-J.C. (see Potts-R.B.)......**13** (1955), 38

Watanabe-H. On the Ground Level Splitting of Mn^{++} and Fe^{+++} in Nearly Cubic Crystalline Field............ **18** (1957), 405

Watanabe-I. On the Heisenberg Treatment of the Field Variables........**10** (1953), 371
On the Renormalization of Heisenberg Treatment...............**14** (1955), 151

Watanabe-K. (see Higashi-S.) .... **16** (1956), 250 (L)

Watanabe-M., Miida-J. & **Sato-M.** On the Neutron-Proton Scattering.. **5** (1950), 162 (L)
——— (see Muto-T.)..........**8** (1952), 231
(see Yamashita-J.).... **12** (1954), 443

Watanabe-S. On Dirac's General Transformation Function. I. II- a). II- b **2** (1947), 71; **3** (1948), 378; **4** (1949), 1
A Note on the Dirac Space ....**2** (1947), 98 (A); **3** (1948), 160
On a Pair of Reciprocal de Sitter Spaces....................**3** (1948), 450 (L)
— Mass Reversal and Space-Time Inversions..................**15** (1956), 81 (L)
Symmetry in Time and Tanikawa's Method of Superquantization in regard to Negative Energy Fields......**15** (1956), 523

Watanabe-T. (see Narumi-H.).. **19** (1958), 591 (L)

Watanabe-Yôiti (see Nakano-T.)......................... **5** (1950), 338 (L); **5,** 1014
——— (see Saito-Y.)......... **7** (1952), 103
A Classical Theory of the Collective Description...............**16** (1956), 1
——— Constraint in a Quantum System .... **16** (1956), 534 (L)
see Nishiyama-T. ....**18** (1957), 93 (L)
(see Koh-Y.).......**18** (1957), 663 (L

Watanabe-Yukihiko (see Ito-D.)................. **7** (1952), 128 (L); **13** (1955), 594
——— On the Analysis for the Proper Field of a Nucleon..........**13** (1955), 603

Watari-W. Analytical Expression of Self-Consistent Functions and Doublet Intervals for F I, Ne II, Mg IV and Al V.... ....**4** (1949), 42
Intervals of Cl I, A II, K III, Ca IV ^2P...................... **4** (1949), 312
Triplet Intervals of Beryllium and Calcium..................... **4** (1949), 314
(see Araki-G.) **6** (1951), 135; **6,** 945, **6,** 961
Electronic States of F_2- and O_2-Molecules................... **8** (1952), 524
——— (see Fujii-S.).................... .... **10** (1953), 478 (L); **11** (1954), 11
see Matsumoto-M.) **11** (1954), 63; **12** (1954), 503
——— (see Tani-Smio)...... **14** (1955), 243
(see Suekane-S.) ....**14** (1955), 490 (L); **20** (1958), 108 (L)
—— (see Iwadare-J.)................. ....**15** (1956), 86 (L); **16** (1956), 455; **16,** 472; **16,** 604; **16,** 658; Sup. **3** (1956), 13; Sup. **3,** 32
(see Kajikawa-R.)............... .... **16** (1956), 152 (L); **18** (1957), 103
(see Otsuki-S.)....**19** (1958), 217 (L)
Neutron-Proton Scattering and Pion Theory of Nuclear Forces....**20** (1958), 181

Watase-Y. (see Higashi-S.) ....**16** (1956), 250 (L)
——, **Mitani-S., Suga-K.** & **Tanaka-Y.** On the Production of Mesons in Hydrogen and Carbon above 10 GeV. II....... .... **18** (1957), 314 (L)
(see Fukui-S.).... **19** (1958), 348 (L)

Weiss-G.H. (see Mahanty-J.)..**20** (1958), 369

Wentzel-G. Nuclear Saturation Phenomena deducible from Pair Theories.. **5** (1950), 584

Wigner-E.P. Conservation Laws in Classical and Quantum Physics...**11** (1954), 437

Yajima-N. (see Nozawa-M.).. **17** (1957), 504 (L)
——— & **Kobayakawa-K.** Multiple Meson Production in Antinucleon-Nucleon Annihilation..................**19** (1958), 192

Yamabe-S. & **Sanada-J.** Neutron Cross Section and Nuclear Shell Structure .... **5** (1950), 1049 (L)

Yamada-E. (see Umezawa-H.) .... **3** (1948), 317 (L); **3,** 456 (L); **4** (1949), 25; **4,** 113; **4,** 251
Anomalous Magnetic Moment of the Nucleon .... **5** (1950), 312 (L); Sup. **5** (1958), 1
(see Ogawa-S.) .... **5** (1950), 503 (L); **5,** 977; **6** (1951), 227; **6,** 444 (L)

Yamada-E. *(continued)*

——, **Nagahara-Y.** & **Ogawa-S.** On the Absorption of Negative π-Meson by Proton. II............... **6** (1951), 131 (L)

—— (see Minami-Shigeo)... **8** (1952), 531

—— (see Marumori-T.)........................ **13** (1955), 557 (L)

—— (see Matumoto-K.)........................ **19** (1958), 216 (L)

Yamada-M. & **Morita-M.** On the β-Ray Angular Correlations......... **8** (1952), 431

—— (see Morita-M.).... **8** (1952), 449; **10** (1953), 111 (L); **10,** 630; **10,** 641; **13** (1955), 114 (L)

—— On the Relations between Beta-Decay Nuclear Matrix Elements........................ **9** (1953), 268

—— Note on the Finite Nuclear Size Effect in Beta-Decay.....**10** (1953), 241 (L)

—— Correction to the Beta-Decay Nuclear Matrix Elements.... **10** (1953), 245

—— Theoretical Reinvestigation of the Beta-Spectrum of RaE........**10** (1953), 252

—— (see Fujita-J.)..... **10** (1953), 518; **11** (1954), 219; **20** (1958), 287

—— On the Electron-Neutron Interaction.................... **13** (1955), 124 (L)

—— (see Ohmura-T.)............................**15** (1955), 222; **17** (1957), 326

—— (see Iwamoto-F.)............................**17** (1957), 543; **18** (1957), 345

—— (see Matumoto-Z.).... **19** (1958), 285

Yamaguchi-Y. (see Fujimoto-Y.)........... **3** (1948), 462 (L); **4** (1949), 101 (L); **4,** 230 (L); **4,** 233 (L); **4,** 381 (L); **4,** 468; **4,** 571 (L); **4,** 575 (L); **4,** 576 (L); **4,** 579 (L); **5** (1950), 76; **5,** 141 (L); **5,** 196; **5,** 318 (L); **5,** 498 (L); **5,** 669; **5,** 787; **5,** 870; **6** (1951), 166; **10,** (1953), 476 (L); Sup. **1** (1955), 231; Sup. **1,** 232

—— On the Nuclear Stars (*Addendum for* Vol. 4, p. 468)........**4** (1949), 569 (L)

—— (see Hayakawa-S.).. **4** (1949), 570 (L)

—— Notes on High Energy Nuclear Evaporation............ **5** (1950), 142 (L)

—— Note on High Energy induced Fission of Bi................ **5** (1950), 143 (L)

—— The Effect of Exclusion Principle on the Nucleon-Nucleon Scattering in Nuclear Matter............. **5** (1950), 332

—— Order of Magnitude Theory of the Depression of Coulomb Barrier Height in Highly Excited Nuclei.... **5** (1950), 501 (L)

—— (see Takayanagi-K.).. **5** (1950), 894 (L)

—— On the Stars of Light Nuclei.......................... **5** (1950), 896 (L)

—— On the Nuclear Stars........................... **5** (1950), 904 (L)

—— (see Aidzu-K.)......... **5** (1950), 931

—— (see Horie-H.).... **6** (1951), 254 (L)

—— Remarks on the Production of Cosmic-Ray Mesons...... **6** (1951), 260 (L)

—— (see Umezawa-M.).... **6** (1951), 408

—— Remarks on the Neutron-Proton Scattering with Tensor Force.......................... **6** (1951), 439 (L)

—— Zero-Zero Transition and Electron-Neutron Interaction...... **6** (1951), 442 (L)

—— Note on Very Large Cosmic-Ray Stars. II...................... **6** (1951), 529

—— (see Nambu-Y.)...................... **6** (1951), 615 (L); **6,** 619 (L); **6,** 1000

—— The Phenomenological Analyses of Mesonic Processes............ **6** (1951), 772

—— (see Nakano-T.).. **6** (1951), 1028 (L)

—— Meson Reactions in Deuterium and Meson-Nucleon Scattering (*cf.* Errata: Vol. 7, p. 267)................. **7** (1952), 93

—— (see Saito-Y.)......... **7** (1952), 103

—— (see Kotani-T.)................................. **7** (1952), 469; **8** (1952), 120

—— A Note on Photon-Nucleon Scattering......................**12** (1954), 111 (L)

—— Elastic Production of Neutral Photo-Pions in Helium... **13** (1955), 459 (L)

—— (see Suekane-S.)..................................... **17** (1957), 443; **17,** 449

—— On the Annihilation Cross Section of the Antinucleon and the Nucleon............................. **17** (1957), 612 (L)

—— (see Hayashi-C.).. **17** (1957), 615 (L)

—— (see Minami-Shigeo)........................... **17** (1957), 651; **18** (1957), 39

—— (see Ogimoto-T.).. **17** (1957), 817 (L)

—— Phenomenological Analysis of the Decay Processes of the Σ- and Λ-Hyperons.......................... **19** (1958), 485

Yamaguchi-Y. (*continued*)
—— The Possible Existence of a Neutral Meson with Isotopic Spin 0. . . . . **19** (1958), 622
—— The Global Symmetry of Pion-Baryon Interactions and Bound States of Hyperon-Nucleon System . . . . **20** (1958), 112 (L)
—— Theory of Scatterings and Reactions. . . . . Sup. **7** (1958), 1

Yamahuzi-K. & **Tanaka-T.** Effects of Defects on Lattice Vibrations——*Thermodynamical Properties*——. . . . **20** (1958), 327

Yamamoto-A. (see Marumori-T.). . . . . **15** (1956), 582 (L); **15,** 584 (L); **16** (1956), 320

Yamamoto-K. (formerly Naito-K.) On the Theory of the Unstable Particle in Lee's Model **18** (1957), 200
—— On the Theory of the Unstable Particle. II **18** (1957), 614
—— Theory of Unstable Particles in the Wave-Packet-Formalism. **20** (1958), 857

Yamamoto-Takao Analytical Representation of Spin. . . . . **8** (1952), 258 (L)
—— Generalization of Analytical Spin . . . . **8** (1952), 570 (L)
—— Analytical Representation of General Spin. . . . . **10** (1953), 579 (L)
—— An Example of Five-Dimensional Field. . . . . **13** (1955), 217 (L)

Yamamoto-Tsunenobu & **Takagi-S.** Remarks on the Ferromagnetism of the Semi-Conductors. . . . . **2** (1947), 160 (L)
—— On the Crystal Statistics of Two-Dimensional Ising Ferromagnets. **6** (1951), 533
—— Statistical Mechanics of General Brownian Motions underlying Irreversible Processes. **10** (1953), 11
——, **Tani-K.** & **Okada-K.** On the Energy Dissipation of Conduction Electrons undergoing Elastic Scattering by Impurities. . . . . **15** (1956), 184 (L)
—— & **Matsuda-H.** On the Grand Canonical Distribution Method of Statistical Mechanics. **16** (1956), 269

Yamamoto-Y. Charge Distribution of Pions produced in High Energy Nuclear Collisions. **18** (1957), 81

Yamamura-I. (see Nakabayasi-K.). . . . . **10** (1953), 694 (L); **10,** 696 (L)

Yamanouchi-Taiji & **Fukuda-N.** The *D*-Wave Contribution to Pion-Nucleon Scattering. **13** (1955), 200

Yamanouchi-Takahiko Elastic Collision Cross Section of Oxygen Atom for Slow Electron. **2** (1947), 33
—— (see Ohmura-T.). **20** (1958), 82

Yamasaki-S. (see Nakasima-R.) **19** (1958), 31

Yamashita-J. The Theory of the Dielectric Constant of Ionic Crystals. I. . .**8** (1952), 280
—— & **Watanabe-M.** On the Conductivity of Non-Polar Crystals in the Strong Electric Field. I. **12** (1954), 443
—— The Theory of the Dielectric Constant of Ionic Crystals. II —— *Effect of Temperature*—— **12** (1954), 454
—— A Note on Superexchange Interaction. . . . . **12** (1954), 808 (L)
—— Theory of Electron Multiplication in Silicon. **15** (1956), 95

Yamazaki-K. & **Enatsu-H.** On the Self-Energies of Mesons. **6** (1951), 731
—— Operator Calculus in Quantized Field Theory. **7** (1952), 449
—— (see Katayama-Y.) . . . . **7** (1952), 601 (L)
—— (see Pac-P.Y.) . . . .**12** (1954), 689 (L)
—— (see Tani-Smio). **12** (1954), 723
—— On Feynman's Theory of Polarons . . . . **15** (1956), 508 (L)

Yamazaki-M. (see Ito-D.) . . . . **7** (1952), 128 (L); **18** (1957), 264
—— (see Chiba-S.). **12** (1954), 767

Yanagawa-S. Theory of Normal Modes of Vibration of Crystal (*cf.* Errata: Vol. 10, p. 370). **10** (1953), 83
—— The Orbit-Orbit Interaction. . . . . **13** (1955), 559 (L)
—— On the Ground State Spin of Ti^{47} and Mn^{55}. . . . . **18** (1957), 661 (L)

Yasuno-M. Rotational Excitation with Neutron Inelastic Scattering. . . . . **15** (1956), 586 (L)
—— (see Sasakawa-T.). . . . **20** (1958), 315

Yokoi-K. (see Ono-K.). . . . **13** (1955), 101 (L)

Yokota-I. On the Equivalence of Moment Method and Fourier Transform Method in the Theory of Spectral Line Shape. . . . . **8** (1952), 380 (L)

Yomosa-S. & **Nagamiya-T.** The Phase Transition and the Piezoelectric Effect of KH_2PO_4............................ **4** (1949), 263

—— Theory of the Susceptibility and Specific Heat of He^3..........**17** (1957), 487

Yonezawa-M. (see Ouchi-T.)........................ **14** (1955), 172 (L); **15** (1956), 431

see Furuichi-S. .... **16** (1956), 64 (L); **17** (1957), 89

Yoshida-S. (see Horie-H.) .... **6** (1951), 254 (L); **6**, 623 (L); **6**, 829; **8** (1952), 341

On the High Energy Nuclear Photoelectric Reaction........ **6** (1951), 1032 (L)

—— Deuteron Stripping Reaction (*cf.* Errata: Vol. 10, p. 370) **10** (1953), 1

—— (see Sugie-A.).... **10** (1953), 236 (L)

(see Fujimoto-Y.)..... **11** (1954), 264

Reduced Width on Collective Model **12** (1954), 141

see Morita-M. **12** (1954), 713

—— (see Hayakawa-S.)......**14** (1955), 1

Theory of Direct Interaction in Nucleon Inelastic Scattering **19** (1958), 169

—— (see Matsunobu-H.)... **19** (1958), 599

Yoshikawa-S. & **Hasebe-T.** New Proposal on the Mass Spectrum of Elementary Particles.................**10** (1953), 359 (L)

—— & **Hasebe-T.** Further Comments on the Proposed Mass Spectrum................................. **11** (1954), 496 (L)

& **Hasebe-T.** An Empirical "Charge Dependence" Relation to the Rest-Masses of Elementary Particles.............................**12** (1954), 403 (L)

Yoshimura-T. (see Kotani-T.)..**6** (1951), 1007

On the Renormalization of Salpeter-Bethe Kernel of Meson-Nucleon System in the State $T=1/2$ ....**11** (1954), 224 (L)

—— On the Consistency of the Quantum Field Theory based on the Renormalization Hypothesis .... **13** (1955), 220 (L)

—— A Remark on the Interaction of the Second Kind......... **13** (1955), 336 (L)

Yoshizawa-Y. (see Nakasima-R.).................................... **19** (1958), 31

Yosida-K. & **Miyahara-S.** Pri la Teorio Alojteorimaniera de Feromagnetismo.................................. **3** (1948), 74

On the Relation between Heisenberg's Theory of Ferromagnetism and That of Slater............**4** (1949), 151

—— Note on the Magnetic Resonance Absorption in Paramagnetic Salts................................**5** (1950), 1047 (L)

Note on the Magnetic Properties of the FeSn System........... **6** (1951), 356

—— On the Antiferromagnetism of Single Crystals................**6** (1951), 691

—— On the Antiferromagnetism of $CuCl_2 \cdot 2H_2O$ Single Crystal......**7** (1952), 25

Theory of the Antiferromagnetic Resonance Absorption in $CuCl_2 \cdot 2H_2O$.................................. **7** (1952), 425

Anisotropy in the Antiferromagnetic MnO_2...............**8** (1952), 259 (L)

—— (see Moriya-T.)........**9** (1953), 663

—— (see Kanamori-J.)..... **14** (1955), 423

(see Tachiki-M.)...... **17** (1957), 223

& **Tachiki-M.** On the Orgin of the Magnetic Anisotropy Energy of Ferrites.....................**17** (1957), 331

Yukawa-H. An Attempt at the Theory of Elementary Particles.. **2** (1947), 98 (A)

—— On the Theory of Elementary Particles. I **2** (1947), 209

—— Reciprocity in Generalized Field Theory.................. **3** (1948), 205 (L)

—— On the Nature of the Mesotron.............................**3** (1948), 217 (A)

—— Possible Types of Nonlocalizable Fields (*cf.* Errata: Vol. 4, p. 102)................................ **3** (1948), 452 (L)

—— On the Difference between Local and Non-Local Fields..... **6** (1951), 133 (L)

—— Special Theory of Relativity and the Structure of Elementary Particles.............................**16** (1956), 688 (L)

—— On the Interaction of Elementary Particles. I ....Sup. **1** (1955), 1

—— On a Possible Interpretation of the Penetrating Component of the Cosmic Ray......................Sup. **1** (1955), 11

& **Sakata-S.** On the Interaction of Elementary Particles. II..Sup **1** (1955), 14

—— **Sakata-S.** & **Taketani-M.** On the Interaction of Elementary Particles. III ....Sup. **1** (1955), 24

Yukawa-H. *(continued)*

———, **Sakata-S., Kobayasi-M.** & **Taketani-M.** On the Interaction of Elementary Particles. IV ..Sup. **1** (1955), 46

——— & **Sakata-S.** The Mass and the Lifetime of the Mesotron..Sup. **1** (1955), 72

——— & **Sakata-S.** Mass and Mean Lifetime of the Meson .... Sup. **1** (1955), 75

——— & **Okayama-T.** Note on the Absorption of Slow Mesotrons in Matter .... Sup. **1** (1955), 76

——— Bemerkungen über die Natur des Mesotrons................ Sup. **1** (1955), 197

——— Models and Methods in the Meson Theory...................Sup. **1** (1955), 238

Yukawa-J. (see Umezawa-H.) ....**3** (1948), 317 (L); **4** (1949), 25; **4**, 113

———, **Oda-N.** & **Umezawa-H.** Relativistic Covariance in the Quantum Electrodynamics...........**5** (1950), 320 (L)

——— & **Umezawa-H.** On the Problem of Covariance in Quantum Electrodynamics. I, II............**6** (1951), 112, 197

——— (see Marumori-T.).... **13** (1955), 442

——— The Theory of Radiative *K*-Capture. I......................**15** (1956), 561

INFORMATION FOR CONTRIBUTORS

Manuscripts

(i) ***General.*** Manuscripts should be typewritten (preferably in *Pica* size type), double spaced, with margins of 2 cm. on both sides, on white paper approximately 21×30 cm., temporarily bound with a piece of string or a paperclip. *Two copies* (one original, one carbon copy) *should be submitted* to the Editorial Office while the third copy is to be kept by the author. Every sheet of the manuscript should be numbered in the upper right corner. Spell the author's name in full with his last name in capital letters. Textual material will consist of an abstract, the body of the paper (including tables and figure captions in their proper positions) and references, and all of them must be typewritten. Any recent issue of this journal may be referred for examples as to general style, arrangement, abbreviations, etc. *A Letter to the Editor* must be shorter than 100 typewritten lines so that it will be no longer than two pages when printed. Spaces for tables and figures should be deducted accordingly.

Alterations in the text should be avoided once the paper is set in type. Authors will be charged for excessive corrections due to their inattention.

(ii) ***Abstract.*** An abstract should be confined within a page of the manuscript but indicate the scope of the research and principal findings.

(iii) ***References.*** References should be numbered consecutively in the order of their appearance and listed after the text. The form of the citations should be conformed to that used in this journal, e.g.,

H. Yukawa, Rev. Mod. Phys. **21** (1949), 474.

Name of books must appear in italic letters. Each citation should be referred to in the text by the key number. Citation from other than those published in journals or in book form are recommended to be referred to footnotes.

(iv) ***Tables.*** Tables are preferred to be organized as a part of the running text and must be numbered in arabic numerals. Avoid complicated column headings.

(v) ***Mathematical expression.*** It is desirable to type—wherever possible—all mathematical and chemical symbols, equations and formulas. If these should be handwriten, write in carefully and clearly, leaving enough space above and below for printer's marks. Identify in the margin Greek letters and unusual symbols. Superscripts and subscripts should be placed carefully, using inverted carets and carets, respectively. *Complicated usage of both super- and subscripts must be avoided. Use the solidius (/) for fractions* in order to save vertical space and to facilitate typesetting at the same time.

Figures

Authors are cautioned that all figures be submitted in a form ready for reproduction, on sheets separate from the running text. Figure captions should be typed and included in their approximate points in the text. The author's name and figure numbers should appear on the back or other suitable place of the illustrations

Drawings should be carefully made with India ink on white paper and all lines should be of sufficient thickness to reproduce well.

Proof

For the contributors inland, the author will receive the first proof, which should be sent back to the Editorial Office within 7 days. For the contributors abroad, all proofreading will be taken care by the staff of the Editorial Office, in order to save time and postage both ways, unless the author states his desire to read the first proof himself.

Reprints

Charge for reprints are based on the number of printed pages, the cost per page being ¥3 for inland and ¢1 for overseas contribution. (A Letter to the Editor is always ¥15 or ¢5 per copy whether long or short.) Orders for reprints must be sent to the ' Editorial Office ' ahead of publication. The number of reprints to be ordered should be a multiple of 50 as it suits the printer's convenience.

……

The following is the list of Letters used in this Journal.

(i) Latin letters

A , a, $_{a}$ (roman), *A* , *a*, $_{a}$ (italic)

A , **a** (bold roman), ***A*** , ***a*** (bold italic)

𝒜 , ℬ 𝒜 , ℬ (script), Capital letters only.

A , a (Futura), *A* , *a* (Futura italic)

A , **a** (Futura bold), ***A*** , ***a*** (Futura bold italic)

(ii) German letters

𝔄, 𝔞 (roman), 𝕬, 𝖆 (bold)

(iii) Greek letters

Small : *αβγδ∂ϵεζηθϑικλμνξοπρστυϕφχψω*

Capital : *ΓΔΘΛΞΠΣΥΦΨΩ*

Bold : ***αβγδ∂εζηθϑικλμνξοπρστυϕφχψω ς*** **ΔΛΘΠΨ**

Suffix : ΓΔΘΛΞΠΣΥΦΨΩ αβγδ∂ϵεζηθϑικλμνξοπρστυϕφχψω

Authors should be careful to distinguish between capital and small letters, and Latin and Greek ones wherever confusions may arise, for example,

A, a ; C, c ; K, k ; O, o ; P, p ; S, s ; V, v ; X, x ; *Π*, π ;
0 (zíərou), o(ou) ; a(ei), α(ǽlfə) ; 1(wʌn), l(el) ; l(el), e(iː) ;
e(iː), ε(ípsirɔn) ; x(eks), χ(kəi) ; k(kei), κ(kǽpə) ; r(ɑːr), γ(gǽmə) ;
w(dʌ́blju), ω(óumegə).

3 8198 301 983 639
UNIVERSITY OF ILLINOIS AT CHICAGO

BOUND BY
HNM